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The American Continents



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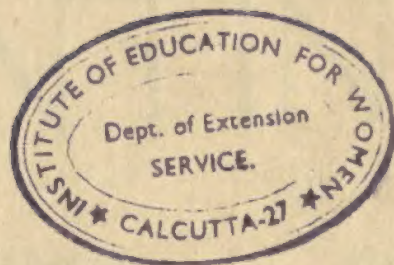
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MAN IN HIS WORLD

ESSENTIAL ELEMENTARY GEOGRAPHY

THE AMERICAN CONTINENTS

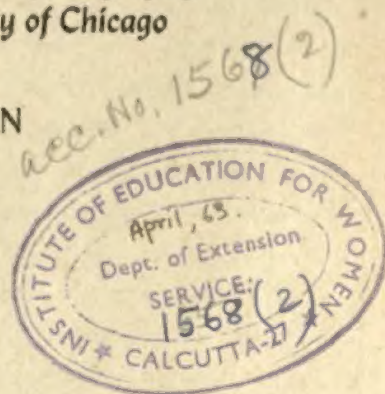
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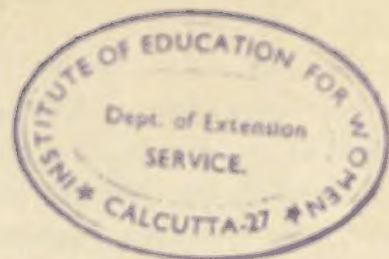


CALIFORNIA STATE SERIES

PUBLISHED BY CALIFORNIA STATE DEPARTMENT OF EDUCATION

1947

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PREFACE

THE AMERICAN CONTINENTS is the second of a series of three textbooks designed for a unified course in elementary geography.

The first book of the series, OUR BIG WORLD, provides the beginnings of such a course. The stories it tells about people in many lands develop a simple understanding of basic relationships between man and the earth. These stories deal with the earth only as the home of man. The underlying theme, from first to last, is *man in his world*. In the development of this theme there is appropriate recognition of the fact that, while many kinds of people live in many kinds of places, they all live in *one world*. In other words, the foundations are laid for realization of the interdependence of people everywhere, regardless of race or culture or stage of technological advancement. Initial experiences in reading globes, maps, and pictures are interwoven with the text as needed. The book contains the essentials of global geography for beginners.

THE AMERICAN CONTINENTS is concerned with the peoples of the New World in their respective homelands. It is keyed to a somewhat higher level, of course, than that followed in the first book. The treatment of the United States, which makes up about two-thirds of this book, is unusual in several ways that will be apparent to the teacher.

It was recognized that the geography of the United States today is largely an outgrowth of its geography in the past. It was recognized, too, that children like to know how things

come about, why things are as they are. Accordingly, the highlights in the historical geography of the United States are presented in a simple manner, easily understandable by fifth-grade children, as a basis for the consideration of the United States of today which follows. Man lives in an ever-changing world, not in a static world. Geography is an evolutionary subject. It is so presented here. It may be added that the geographic aspects of the thrilling story of the building of America have received scant and casual attention in most texts and schools.

A great nation has grown up in the United States in part, in large part, because of the variety and abundance of the natural resources found within the country. For many years, most of these natural resources were used carelessly. Some were wasted recklessly. Hence the conservation movement of later years. The future welfare of the nation is dependent in no small degree upon the *efficient* use of its natural resources, upon using these resources, in so far as possible, on a maximum *sustainable* basis. This task will soon confront the youthful citizens of today. They are the mature citizens of tomorrow. This book therefore emphasizes, wherever practicable, the geographic aspects of conservation.

The discussion of the United States is distinguished by what it does not contain, as well as by what it includes. Available space was sufficient in itself to impose rigorous limi-

tations upon content. Obviously the book could not be, nor should it be, a geographic encyclopedia for children. Various criteria were used in judging items for selection or rejection. One criterion was the adaptability of material to the interests and understandings of fifth-grade children. Another was utility in the training of children for intelligent and useful citizenship. Another rested on the conviction that the distinctive field of state and local geography should not be invaded, that only those items in the geography of each part of the country should be included which have importance in one way or another for American children everywhere. Still another criterion recognized that ideas are more important than facts, but that sane and useful ideas must spring from consideration of relevant facts. In these ways, and others, careful selections of material were made.

Though Canada and Latin America are treated far more briefly than the United States in this book, it is believed that the essential

facts and ideas concerning them, from the standpoint of children in this country, are covered. The inherent solidarity of the peoples of the hemisphere is emphasized. The vital theme of the "good neighbor" is stressed.

An outstanding characteristic of *THE AMERICAN CONTINENTS* is the simplicity of the textual material and the maps. An earnest effort was made to fit the phraseology to the latest established standards. The maps were designed solely to serve the purposes of the text. They are not intended, in other words, to serve as general reference maps. This is not an atlas.

The authors are under obligation to many individuals and organizations for assistance. The contributions of Miss Pearl H. Middlebrook and Mr. Milo Winter are acknowledged with special thanks. Children cannot fail to enjoy the drawings made by Mr. Winter. He has added much to the attractiveness and usefulness of the book.

HARLAN H. BARROWS

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CLARENCE WOODROW SORESENSEN, I

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THE UNITED STATES

A New-World Country

New and old. The American continents are called the New World. Before explorers from Europe discovered them, it was thought that Europe, Asia, and Africa were the only continents. Finding North America and South America seemed like finding another world.

The American continents were far across the sea from homes in the Old World of Europe, Asia, and Africa. Indians lived in those far-off American lands. There were no such Indians in the Old World. Explorers told that in America there were useful new plants, much fertile land, and riches of many other kinds. It certainly seemed that a new world had been found.

Some of the Old-World countries were very old long before America was discovered. The countries into which the New World is now divided are still young. Our own country, the United States, is one of these young countries. Today the New World is not as different from the Old World as it was when settlers first came to it, but in many ways it is still new.

Homes across the sea. Some of the people who came about three hundred years ago to make new homes in America are shown in the picture. These people left comfortable homes in Europe. They did not know what kinds of homes they could have in the strange New World.

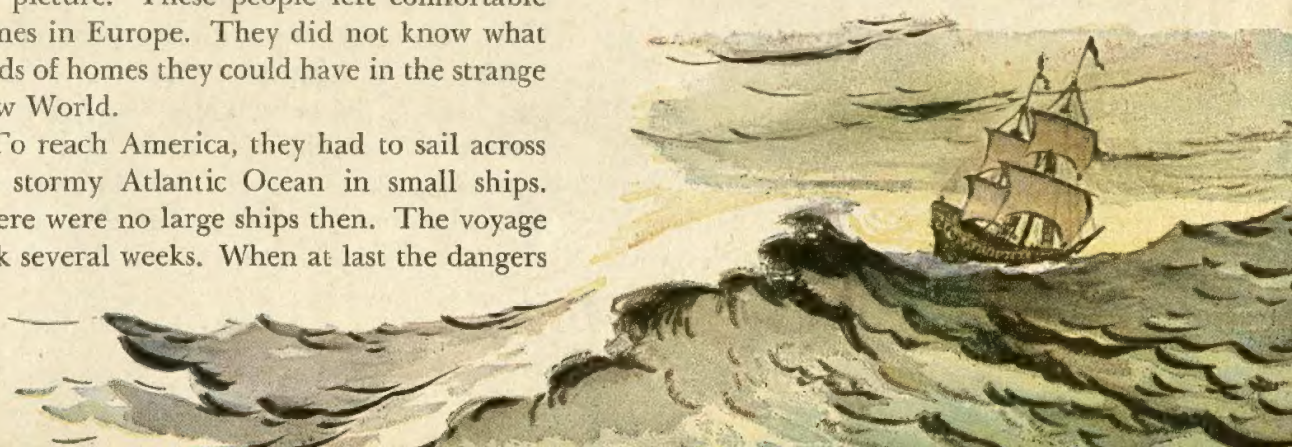
To reach America, they had to sail across the stormy Atlantic Ocean in small ships. There were no large ships then. The voyage took several weeks. When at last the dangers

of the sea were past, new dangers had to be faced on land.

No homes were waiting for these people. They had to build their own. Bad weather might come before they could finish any houses. The food which they had brought would not last long. They hoped to catch fish or shoot game or find wild herbs and fruits to eat so they would not starve before they could raise some crops.

Though they had left most of their possessions behind them, they had been wise enough to bring along their tools. They needed spades to make the ground ready for their seeds. With axes and saws to use, they could chop down trees and cut logs for houses. There were many tasks to do, and they needed many kinds of tools.

"Would their precious seeds grow in this new land?" they wondered. "What would they find farther inland from the coast? If Indians lived near-by, would they be friendly?" None of them knew the answers. But with their tools, they set to work to make their dreams of new homes in a rich New World come true.



Great changes. If the people who came to the New World in those early days could travel about in North America and South America today, they would hardly believe their own eyes. They would see many things which would surprise them.

It is hard to imagine how these people would feel if their ships could land at the city of New York. There they would see the tall buildings shown in Figure 2. They might wonder how men could build such skyscrapers, and how people could climb to rooms many stories above the ground.

The elevators in these buildings, the electric lights, automobiles, trains, and airplanes would all be strange to these visitors. Even the word electricity would be new to them. The huge city, with its millions of people and its giant buildings, might make them wonder if they had come to some other new world.

Stories that ships tell. Perhaps the big ocean ships would surprise the people of early days as much as any of the other things they would see. As they watched men unload and load the ships, they would find out much about work today in other places in the New World. It takes many farmers to raise enough wheat or enough cotton to fill one of the large ships that sail to New York. Somewhere else, then, there must be many farms where men raise wheat or cotton.

There would not be so many automobiles to ship away from New York if there were not many people at work in automobile factories in our country. Some of the ships that leave this port are tank ships that carry oil. The oil has been mined in oil fields. Each of the other things that men send away in the big ships shows something else about work and riches in America today.

Changes and work. New York is the largest American city, but there are many other great cities in the New World. Some of them are in North America. Others are in South America. Each of these cities would

be full of surprises to people who lived in the New World three hundred years ago. And the thousands of miles of paved roads, the big bridges across the rivers, the tractors on the farms, and many other such things would seem as surprising as the cities.

The story of the surprising changes in the New World is a long one, for those changes took place little by little. As people moved again and again to make homes on new land, there were new hardships to meet. From time to time men invented new tools. People worked out better and better ways of using the riches they found. So changes that seem almost like magic were brought about by much hard work. It was not easy to make the New World what it is today.

The New World on the globe. Of course, no one can see more than a very small part of the huge New World at one time. Even after explorers reached America, it took a long time for them to see enough of the New World to know how to show it on a globe.

As the large globe on page 4 shows, the American continents stretch a long distance southward from the cold Arctic Ocean. If an airplane flew from the northern coast of North America to the southern tip of South America, it would have to fly more than 8000 miles. A trip along the equator around the whole world would be only about three times that long.

Exploring many kinds of places. Along the Arctic coast of North America, explorers had to work where there are long, very cold winters and much ice and snow. South America reaches far south of the equator, and near its southern tip the explorers also found cold, stormy weather.

As the globe shows, the equator crosses northern South America. So along some of the coasts of the New World which men explored, it is hot throughout the year.

In most places between the hot lands and the cold lands in North America, it was easier to explore during the warmer months





Figure 3. The American Continents on the globe



Figure 4. High mountains near the Pacific.

than in December, January, and February. Of course, in the part of South America that is south of the hot lands near the equator, winter comes when it is summer in North America.

Between Europe and the New World. It is not hard to see from the globes on page 4 why people in Europe did not discover the New World for so long. The Atlantic Ocean, which lies between Europe and the American continents, is so large that it was hard for men to cross it in small ships.

The smaller Arctic Ocean also touches both Europe and the New World. But it is not a good highway for ships because much of it is covered with ice.

Today, people sometimes travel from Europe to North America across the huge continent of Asia and the huge Pacific Ocean. Such a journey, of course, is much harder and very much longer than one across the Atlantic.

Facing east. It was fortunate that the eastern coast of the New World was nearer Europe than the western coast. As the large globe on page 4 shows, there are high mountains near the western coast of the New World. They run all the way from north-western North America to the southern end of South America.

In part of North America, the belt of western highlands is very wide. Some of the

mountains near the Pacific coast of the New World are shown in Figure 4. It is hard to cross such mountains except in airplanes.

There also are some mountains near the Atlantic coast. But they are not so high as the western mountains and do not stretch all the way along the coast.

The globe also shows that most of the long rivers of the New World flow into the Atlantic Ocean or into some gulf or sea connected with that ocean. Most of the low land in the New World slopes down eastward or southward toward the Atlantic. Before there were any railroads, it was hard to reach any of the larger lowlands from the Pacific coast. The New World clearly faced east and that was very helpful to settlers from Europe.

A shut-off world. The oceans that surround the New World shut it off, except by sea or air, from all parts of the Old World. Now, of course, the New World is not as much shut off as it was before men could build big fast ships and airplanes. Even the huge Pacific no longer keeps peoples along its eastern and western coasts so much apart as in earlier days. Yet it still is easy to see why, for a long time, the American continents seemed to people in Europe to be a shut-off world.

From ocean to ocean. Our huge country stretches across North America from the Atlantic to the Pacific. Its boundaries are



© Peace and Wilks

Figure 5. Road signs in two languages

shown on the large globe on page 4. If an airplane flew from ocean to ocean along its northern boundary, it would fly more than 3000 miles. That long boundary is between the United States and Canada, the huge country north of ours. Like the United States, Canada stretches from the Atlantic Ocean to the Pacific Ocean.

South of the United States. The Gulf of Mexico is south of the eastern part of the United States, and the *country* of Mexico is south of the western part of it. The boundary between Mexico and the United States is much shorter than the boundary between the United States and Canada.

The picture in Figure 5 shows two signs side by side at a road corner which is near the boundary between the United States and Mexico. There are two English words on one sign and two Spanish words on the other sign. Camino crucero are the Spanish words for cross road. It is helpful to have this sign printed in the Spanish language as well as in our language because people in near-by Mexico speak Spanish instead of English.

Spanish is spoken in almost all of the other countries in the New World which are south

of the United States. In one country in South America, the people speak Portuguese, a language somewhat like Spanish. Both Spanish and Portuguese are called Latin languages, and the part of the New World which is south of the United States is called Latin America. It includes the southern part of North America, all of South America, and the islands between the United States and South America.

Reasons. When settlers came from the Old World to the New World, they kept on speaking, of course, the languages they had used in the Old World. Most of the early settlers who came to parts of the New World which are south of the United States came from Spain or Portugal. So today in Latin America, the languages and customs of the descendants of the early settlers are much like those of people who now live in Spain and Portugal.

Many of the early settlers who came to live in the part of the New World north of Latin America came from England. It is not surprising, then, that most of the people in that part of the New World are much like the English people and speak the English language.

In our huge country. The picture in Figure 6 was taken in the southwestern part of our huge country. It would be easy to think, because of the date palms, that this picture had been taken in Africa, near the lower Nile River.

Some places in western United States look much like places in Switzerland. In some other places, trays of raisins drying in the summer sun suggest Mediterranean lands. In other parts of the country, fishing boats, farms, forests, and factories suggest places in many other countries. The United States is as large as the whole continent of Australia, and there are a great many different kinds of places in it.

Many things about the United States which cannot be shown on the globe on page

4 are shown in the large map on the next two pages. The numbered lines and the colors on this map are as helpful as the names and signs for cities, rivers, and other things.

Using north-south lines. The numbered lines that run from the bottom to the top of the map are all north-south lines. One of them runs through the city of New Orleans. This city is near the mouth of the Mississippi River. The north-south line that runs through New Orleans on the map does not run through Chicago, but a little west of it. This shows that Chicago is not due north of New Orleans but somewhat northeast of it.

States. The map shows where each state in the United States is. Florida, for instance, is in the southeastern corner of the country. If a pilot flew his plane far enough due north from the easternmost point in Florida, he would reach Lake Erie. On that trip due north he would fly over part of the Atlantic Ocean and then over the states of South Carolina, North Carolina, Virginia, West Virginia, and Pennsylvania.

Using east-west lines. There also are numbered east-west lines on the map. They are curved lines which cross the map from left to right. One of them runs through the city of Minneapolis, in the state of Minnesota.

This east-west line shows that if a pilot flew his plane due west from Minneapolis he would cross the states of Minnesota and South Dakota. He then would fly along the boundary between Wyoming and Montana. He would next fly across Idaho and Oregon and would come at last to the Pacific coast.

Finding how far places are from the equator. If a plane flew from a place on the equator due north to the North Pole it would fly 90 degrees. Each of these degrees is about 70 miles long. The numbers on the *east-west* lines on the map show how far from the equator places are.

In the numbers at the ends of the east-west lines, the sign $^{\circ}$ stands for a degree. The east-west line which runs through Minne-



© Ewing Galloway

Figure 6. Picking dates in southern California

apolis on the map is marked 45° . All places on that line are 45 degrees north of the equator. They are just halfway between the equator and the North Pole.

All places on the east-west line marked 30° are a third of the way from the equator to the North Pole. This east-west line runs through New Orleans. The map shows, then, that New Orleans is 15 degrees, or about a thousand miles, nearer the equator than Minneapolis is. Summers in New Orleans are much longer, of course, than summers in Minneapolis.

The colors on the map. The large globe in Figure 3 shows that there are high mountains in western United States and lower mountains in eastern United States. It does not show *how* high the land is in different parts of the country. The colors in the map in Figure 7 show how high above the sea each part of the country is. The printing in the white part of the map in the lower left-hand corner is called a legend. The legend tells what each color means.

Near the Atlantic coast. On the map in Figure 7, the Appalachian Mountains in eastern United States do not look as much



UNITED STATES

Miles
0 50 100 150 200

SYMBOLS FOR CITIES
AND TOWNS

- More than 1,000,000
- 500,000 to 1,000,000
- 200,000 to 500,000
- Other Selected Cities
- ★ National Capital
- Principal Railroads

ELEVATION IN FEET

- More than 10,000
- 5,000 to 10,000
- 2,000 to 5,000
- 1,000 to 2,000
- 500 to 1,000
- Sea Level to 500
- Below Sea Level



like mountains as they do on the globe on page 4. But the map shows that many of these mountains are between 2000 feet and 5000 feet high.

That map shows, too, that a strip of land less than 500 feet above sea level runs along the Atlantic coast of the United States. Between the mountains and this *coastal lowland*, there is a strip of land which is more than 500 feet high, but not as high as the mountains.

Three hundred years ago, groups of people from Europe had already settled in several parts of the Atlantic coastal lowland. For more than a hundred years after that, all the land along what is now our eastern coast belonged to countries in Europe. Massachusetts, Virginia, and most other parts of that land were colonies of England. Florida belonged to Spain.

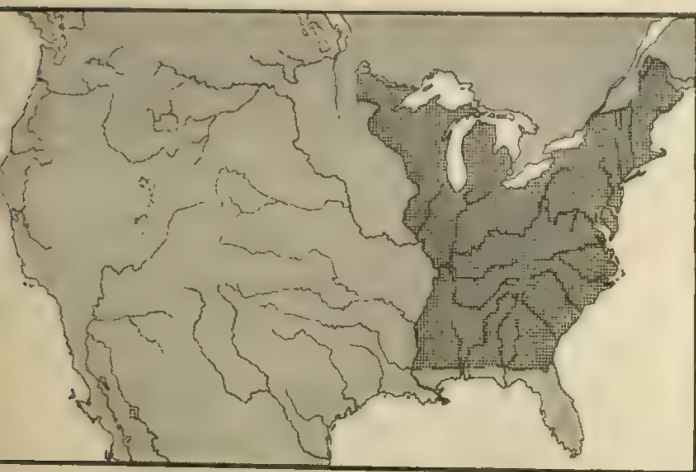


Figure 8. The United States in 1789

A great change. Finally, people in thirteen English colonies banded together to form a country of their own. Each of these colonies became a state. The country they formed was the United States.

The darkest part of the map in Figure 8 shows what territory was in the United States in 1789 when the first president was elected. The Mississippi River, which is now in the eastern half of the United States, then formed

most of the *western* boundary of the new country. And at that time, the country did not touch the Gulf of Mexico.

Moving the flag westward. Even at the time when the United States became a country, nearly all of its people lived in the Atlantic coastal lowland. They called the rich but then almost empty land between the Appalachians and the Mississippi "the West."

Within the next sixty-five years after 1789, however, many people moved westward from the coastal lowland, and "the West" between the Appalachians and the Mississippi was divided into states. During those sixty-five years, too, the United States gained possession of all the rest of the land shown in our country on the map in Figure 7. The years from 1789 to 1854 were great years in the history of the country.

During the last hundred years, many people have moved westward to settle somewhere in the western half of the United States. All that half of our country has now been divided into states.

The high Rocky Mountains (Fig. 7) are at the *eastern* edge of the great belt of western highlands. The wide strip of high, almost level land just east of those mountains is part of the Great Plains. These plains slope from the mountains to the lower land nearer the Mississippi.

Looking ahead. The first four chapters that follow tell about life in earlier days in and near the Atlantic coastal lowland. Chapters after those tell of crossing the Appalachians and of early days between those mountains and the Mississippi. Later chapters tell of settlement farther west. All these stories of earlier days are followed by chapters telling about the United States today and about other countries in the New World.

In the part of our country called New England, there are now the states of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, and Rhode Island (Fig. 7). The next story is about that part of our country.



Figure 9. An early fishing village.

From an old drawing

In Early New England

A village by the sea. About 250 years ago a village near the southeastern corner of New England looked as it does in the picture. Most of the people made a living from the sea. Some were fishermen. Others were whalers. The men near the front of the picture were spreading out fish to dry on the platforms. Most of the fish brought in by the fishing boats were salted, so that they would keep well. The windmills were used to pump up the salt water from which salt was made.

There was little farming near the village, for the soil was poor. The hills in the distance, beyond the harbor, were sand dunes. Some of the low land was marshy. It was not so hard to win a living from the sea as it would have been to get a living from the land.

The houses in this village were close to the shore of the harbor. The harbor was the center of all work. It had made the settlement possible.

Facing the ocean. There were many other good harbors where early settlers built villages along the coast of New England. Some of the people in those villages got all their living from work at sea. Other people worked small farms near coastal villages. Still others got a living from both the sea and the land. They were seamen part of the time and perhaps farmers the rest of the time. Many people had to do more than one kind of work to earn a living. For instance, some men farmed in summer and worked in logging camps in the winter.

For a long time most of the settlements were along the coast. Much of inland New England was hilly, stony, and heavily wooded. Land of this kind was hard to settle and farm. Most streams were not fit to use as highways into the country back of the coast. Many of them were short. Many had falls and rapids. Roads were few and poor. So for many reasons most people found that their chances to get ahead were best near the coast. For



Figure 10. On the Grand Banks

From an old drawing

200 years New England "faced the ocean" and depended chiefly on work at sea.

Harvest of the sea. From all the early settlements on the eastern coast of New England, men put to sea in small boats to catch fish. They needed fish for food. They had good timber close at hand for building fishing boats. The harbors sheltered their boats from stormy weather. Great numbers of codfish came every year to places near the coast, called "banks," where the ocean was shallow. There cool waters from the northern ocean met warm waters from the south. The cod lived in the cool waters. The warm waters brought fish food. Many things, then, led men to take up fishing. All up and down the coast people looked to the sea for food as well as to the land.

Later, cod fishing became a big business in New England and a means of trade with other lands. Fishing vessels were built for longer trips than those made at first, and for larger cargoes. The waters of the "Grand Banks," far to the northeast near the easternmost point of North America, were very rich in fish. They became the chief fishing

grounds. Each year fishing fleets like the one in Figure 10 went from the eastern coast of New England to the Grand Banks.

Markets were found overseas where all grades of codfish could be sold. The best fish were shipped to Spain. The poorest fish, those that were small and thin, were sent to some of the islands of the West Indies. There they were used as food for slaves on plantations.

This kind of fishing was commercial fishing, that is, catching fish for sale. Unlike fishing to supply only the needs of the fisher folk for food, it was carried on chiefly from a few ports. Most of these ports were on or near Cape Ann (Fig. 11). This cape reached eastward, toward the distant fishing banks. It also was near Boston, busiest trading town in New England. Boston merchants loaned money to build and outfit vessels for fishing. They bought fish and exported them. They imported manufactured goods from Europe, paying for them with money they got from the sale of the fish. In such ways they aided the fishing business and made money for themselves.

Ships and salt. The great codfishing industry that grew up in New England helped many people besides fishermen and merchants to make a living. Timber had to be cut in the forests, made into lumber in sawmills, and built into fishing vessels in shipyards. Ships were needed not only to catch fish but also to carry them to market. Sails, ropes, anchors, and other things for the ships had to be made somewhere.

Most of the codfish were salted, because salted cod would keep anywhere for a long time. For this purpose, many thousands of bushels of salt were needed each year. Salt works were started here and there along the eastern coast. Sea water was put in shallow wooden tanks out of doors. The water evaporated, leaving behind the salt it had contained. To get salt faster, sea water was boiled in big kettles. Then wood had to be cut and hauled for fuel. Also, much water had to be evaporated or boiled to get a little salt.

After a time, more and more of the salt needed to keep fish fit for food and needed for other uses was brought from Mediterranean ports. There it was easy and cheap to make salt. The water in the Mediterranean Sea is much saltier than ocean water along the coast of New England. There also are more sunny, warm days than in New England, and evaporation is much faster. So salt making died out along the New England coast. New England salt could not compete with Mediterranean salt. In those days, as always, certain things could be made more easily or cheaply in some places than in other places.

Nantucket whalers. There is an island called Nantucket near the southeastern coast of New England. It is shown on the map in Figure 11. Most of the soil of Nantucket was sandy and poor. It was hard for the island people to make a living by farming. Other work was needed.

Sometimes whales that had drifted close



Figure 11. Part of New England

to land, called drift whales, were sighted by men on the beach. Then other men were called to help row out and bring the whales in to shore. Whalebone, whale oil, and a waxy solid, called spermaceti, which separated from the oil, could all be sold easily. The oil was burned for lighting. Spermaceti was used in making candles and ointments.

So began the famous Nantucket whaling industry. There were not very many drift whales and men sailed farther and farther from home in search of whales. As years passed, whaling voyages were made to the South Atlantic and around Cape Horn into the southern Pacific. Later the whalers went to the northern Pacific, and finally on into the Arctic Ocean. Nantucket prospered. For many years half or more of all whaling ships flying the American flag were owned in Nantucket.

In time, whaling became a risky business. There were fewer whales to catch than in earlier years. A ship might come home with nothing to show for a voyage that had lasted



Figure 12. One of many early shipyards

Based on an old engraving

a year or more. Finally petroleum was discovered and whale oil was not needed as before. Whaling ships were put to new uses or rotted at their docks. The people of Nantucket had to find new kinds of work.

Ocean traders. In every land that touched the Atlantic Ocean people wanted to sell what they produced and did not need. They also wanted to buy what they needed but did not produce. Many ships carried freight back and forth along the ocean highways that connected different peoples in different lands.

No other part of this country had so many ships for ocean trading as New England. No other part depended on the ocean so much or in so many ways. No other could take up ocean trade so easily. Many New England fishermen became merchant seamen. New England shipyards that built fishing vessels also built merchant ships. Busy scenes like that in Figure 12 became common along part of the eastern coast. There were places there where good stands of ship timber, water

power to run sawmills, and water deep enough to launch large boats were not far apart. Such places became the leading centers for building vessels for long ocean voyages.

Trading with the West Indies. For a hundred years or more, the trade of New England with the West Indies was the part of its ocean trade that was most profitable. Fish and timber were common shipments from New England ports to the islands. Sometimes ships carried horses that had been driven to Boston along forest trails from the valley of the Connecticut River (Fig. 11). Of course, no farm product could have been hauled overland so far with profit. The horses walked to the coast.

Flour and salted meats were shipped at ports south of New England. Manufactured wares needed in the islands were carried to them from Europe. Negroes seized in Africa were taken to the islands and sold as slaves to plantation owners.

New England ships, bringing cargoes of many kinds from many lands, got in the West Indies such things as sugar, rum, molasses, cotton, and indigo for return cargoes. Some of them also got mahogany and other tropical woods, and silver from mines on the mainland. The exports of the islands were taken by the New England traders to many markets on both sides of the Atlantic.

Other kinds of ocean trade. Ocean trade of other kinds and in other seas helped later to keep up New England shipping. Men from Boston sailed around South America, visited the western coast of North America, and there traded with Indians. They gave blankets, weapons, and trinkets to the Indians for furs. They took the furs across the Pacific Ocean to China. There they traded the furs for spices, silks, and chinaware. They returned home by way of the Indian Ocean and the Cape of Good Hope, the southernmost point of Africa. Such a trading voyage was a trip around the world. No port was too far away to visit if it offered a good chance for trade.

Inland villages and farms. In time, of course, some people moved away from the coast into the back country of New England. Many of them built their homes in groups to form villages. These villages were all small. And for a time the villagers were all farmers. Even storekeepers, innkeepers, carpenters, and cobblers, when they came, were part-time farmers. They raised food crops in their village gardens and their outlying fields. When a sawmill or gristmill or tannery was built on the bank of a stream in a village, the owner was also a part-time farmer. There was little trade. Only gradually, as roads were improved and the population grew, could villagers depend entirely on any kind of work besides farming.

The man in the picture has done the first and hardest work in making a farm home in the wilderness. He has a warm house, and some cleared land on which to grow food for

his family. But he has no regular market for extra crops that he might grow. It was the same with almost all people who lived on farms around and between the villages. And because these people could sell little, they could buy little. What a farmer and his family could not grow or make for home use, they might have to go without.

An early farmer may have had about 100 acres. Part of his land was woodland, part was pasture land, and the rest was used for crops. On all farms corn and rye were the chief crops. For many years most bread was made with two parts of corn and one part of rye. Vegetables enough for a family were grown on a small plot. Every farm had some hogs and, in time, many of the farms had some sheep. Salt pork was a common food. The coarse wool sheared from the sheep was used by the farm women in spinning and weaving cloth.

A farmer in early days got along with a few tools, made mostly of wood. He may have had only a plow, cart, ax, hoe, pitchfork, and shovel. He used oxen instead of horses, as the man in the picture is doing, and an oxcart in place of a wagon. Oxen

Figure 13. On an inland farm



worked better than horses on rough land. They were cheaper, too, and it cost less to keep them. Carts were made strong enough for use on the worst roads. The wheels were big. Big wheels moved better than small wheels over ruts and bumps in the roads and lanes.

Building homes. Timber cut in clearing land for farming was used for most buildings. Farmhouses were made snug and tight. They had big fireplaces, in which wood cut on the farms was burned. Most of them were a story and a half high, with long, steep roofs. The barns, too, were sturdy buildings. New England winters were cold and snowy. Good housing was needed for both people and stock.

The farm fields were surrounded by rail fences or stone walls. The first settlers found most of the land heavily forested. There were very many stones and boulders. It is said that it took a man a month or more to clear an acre of ground and another month to gather up the surface stones and boulders and build them into wall-like fences.

Life on all the inland farms in early days was a hard life. Lack of good roads and markets did much to make it hard. Lack of any good money crop also helped to make it hard. Of course, the conditions of farm life gradually got better as time passed.

The hub of New England. Boston quickly became the largest town in early New England because it had the best location for trade. It had a fine harbor — large and deep and sheltered by islands from storm waves on the open bay to the east. Then, too, Boston was farther west than any other seaport on the eastern coast of New England. The general curve of the coast line made it the nearest seaport for a large area of back country. And this back-country area included thousands of acres of good lowland in what is called the Boston Basin.

Many newcomers to New England landed at Boston. Many settled there or in the Bos-

ton Basin. Near-by farmers hauled in things to sell at the free market in the Town House of Boston. This odd-looking "town house" stands in the center of Figure 14. It was a busy place on all market days.

A visitor to Boston when it was young would have found many interesting things to see. He would have seen that the town stood on a hilly peninsula. This peninsula had once been an island. The island had been tied to the mainland by a narrow, low isthmus built by waves and currents. The isthmus was covered at times by water. People cautiously rode their horses through the water, to and from Boston. Later, men built the isthmus higher and filled in the shallow water on either side.

An early visitor would have seen, too, that most streets in Boston were crooked. They were crooked because of the uneven ground and the twisted outline of the peninsula. In Town Cove, off the water front, the visitor might have seen ten or a dozen ships from different lands. On every hand he would have found things which showed that Boston lived by its trade.

As roads were built farther inland, the country trade of Boston grew. All the main roads led to Boston, as the spokes of a wheel lead to the hub. For that reason this busy market town and seaport was called "The Hub of New England."

A great change. About 200 years after the first settlement was made on the coast a great change began in New England. Manufacturing became important. New mill towns sprang up at waterfalls on the larger rivers. Shipping became less important than before. New England was turning from its seaports and ships to its falls and factories.

Things to Remember about our Country

1. *From 1620 to about 1820, most people in New England depended chiefly on work at sea.*



Figure 14. The old Town House in Boston

From an old print

Much land there was _____, _____, and hard to farm, and the coast was very long.

2. *For several reasons many men became fishermen. There were many safe _____, and _____ for building boats was near at hand. Many _____ lived in waters near the coast.*

3. *Ways of fishing changed. Men then used _____ ships, made _____ trips, and worked chiefly from ports on or near Cape _____ They sold fish in _____ and other lands.*

Tell what words belong in the nine blanks.

4. *Boston merchants and several other kinds of workers helped the fishing business. They also were helped by it. Tell how.*

5. *Salt works were needed for a time but salt making later died out. Tell why.*

6. *A whaling industry grew up at Nantucket but in time it, too, died. Give reasons.*

7. *Ships that carried fish and timber to other lands brought back things that people in New England wanted, and trade by sea became very important there. Tell about trade with the West Indies and with Pacific lands.*

8. *Life on inland farms was harder than life*

near the coast. Tell how and why this was so.

9. *Because of its trade, Boston quickly became the largest town in New England. Tell how its location helped its trade to grow.*

Exploring and Finding for Ourselves

1. What part of New England is crossed by the east-west line numbered 45° (Fig. 7)? What does that show about New England (p. 7)?

2. What do the colors on that map show about a large part of New England?

3. On a globe (p. 4) find the easternmost point in North America. Which picture (pp. 11-17) shows work near that place?

4. The village shown on page 11 is named on the map on page 13. It was at the tip of a long, curving peninsula. What was the name of the village?

5. Find the West Indies on the large globe (p. 4). The largest island in them is partly shown in Figure 7. What is its name?

6. What do these words or phrases mean? The Grand Banks. Commercial fishing. Coastal lowland. The Hub of New England.

Along the Eastern Gateway

A great lowland. A belt of nearly level, low land crosses the State of New York, connecting the Atlantic Ocean and the Great Lakes. As the map in Figure 15 shows, it reaches from New York City northward along the Hudson River to Albany and from Albany westward along the Mohawk River and on to Buffalo on Lake Erie. This lowland between New York City and Buffalo is shaped somewhat like a capital L turned in this way, Γ . It is bordered by rolling uplands and low mountains.

This L-shaped lowland was used as a route *into* New York by early fur traders, lumbermen, farmers, and others. Later it became a route for much travel and trade *across* New York. Ever since, the location of the state between the ocean and the Great Lakes has been a main reason for its importance. This lowland through the state became what has been called the eastern gateway of the United States.

New York City, where the lowland meets the sea, became in time the chief city of

the entire nation. Busy cities grew up here and there all along the lowland. Now, as always, most of the people of the state live in this lowland. The lowland has played a large part in the story of New York. It is truly "a great lowland."

Fur traders in the lowland. When Henry Hudson explored the river that bears his name, he found Indians living along its banks. From them he got fine furs in exchange for knives, beads, and other things. A few years later, the first fur-trading post on the Hudson River was built. This was before the first settlement was made in New England. The trading post was on an island in the river, not far below the mouth of the Mohawk River. The traders chose the island because it would not be so hard to defend, if Indians tried to attack them, as a place on the mainland.

After a time the traders, feeling safer, moved to the mainland. They built a trading post on ground which is now in the city of Albany. So Albany, today the capital of a great state, was at first a fur-trading post. It was near the meeting place of the main valleys of the great lowland. It was on the Hudson River, as far upstream as ocean-going boats could go. At Albany, better than anywhere else, furs from the forest lands to the north and west and the goods from Europe that woodsmen and Indians wanted could be brought together for exchange. For this reason Albany was the main inland center of the fur trade in New York.

Trappers and traders used the waterways as much as possible, of course, for travel and transportation. Even many small streams could be navigated, at least part of the time and part of the way, with light canoes made with bark.

Figure 15. The "eastern gateway"





Figure 16. Fur traders and Indians

Sometimes cross-country journeys had to be made on foot, over rough land through dense forests. At times neither the sun nor a star could be used as a guide. At times, too, no helpful landmarks could be seen. Then little signs had great value. For instance, the limbs were larger on the south sides of most tree trunks than on the north sides. Moss was likely to be drier and cleaner on the north sides than on the south sides. Such were the "signs" in the roadless forests of old. Today, plain printed signs guide motorists along smooth highways through forests on some of the same lands.

Furs and fashions. Each year thousands of furs were shipped to Europe from the Hudson River. In even greater numbers, furs were shipped from some of the other North American rivers that flow to the Atlantic. The demand in Europe for beaver, mink, and other furs was great. Members of royal courts set styles, followed by all who could, that called for the use of much fur. Hats, for

instance, were made of beaver fur. It was soft, generally brown in color, and highly prized. So fashions in Europe called for many furs from America.

The Indians of New York, like those of other regions where there were many fur-bearing animals, were eager to exchange furs for European goods. They wanted guns, hatchets, knives, pots, beads, cloth, and other things. The guns were much better weapons than their own bows and arrows or their spears. The hatchets were much sharper than any they could make from stones. The metal pots would not break. Their cooking vessels of earthenware broke easily.

Figure 16 shows white men and Indians who have met not far from Albany. The traders have brought European goods that Indians always wanted and have spread some of them out temptingly on the river bank. The Indians have brought furs that they got during a winter of hunting and trapping. Each side is trying, of course, to get a good bargain.



Figure 17. Cutting timber

In time the fur trade in New York got smaller as the fur-bearing animals were killed off. Finally it almost stopped. At first, the trade had helped settlement. Later, the spread of settlements helped to destroy the trade. Trappers and fur traders gave way to lumbermen and farmers.

Logging and lumbering. Scenes like that in Figure 17 were common in early days near the lower Hudson River. The settlers needed wood for fuel. They needed lumber for houses and barns and other buildings. Some lumber could be shipped away on ocean boats that came up the Hudson. The forests, then, furnished timber both for use close by and for sale. Winter was the best season to

cut timber and move logs over the ground to the nearest stream.

From the lower Hudson the lumber industry spread northward and westward. At the peak of the industry, there were nearly 7000 sawmills scattered over the state. There must have been at least as many logging camps.

Lumbermen depended, even more than trappers and fur traders, on the streams. In early days logs were moved to mills and lumber to markets mostly by water. Then, too, most of the earlier mills were run by water power. As the lumber industry spread, it followed the streams. Albany, near the junction of the main rivers of the great lowland L, was the largest lumber market of the state. For some years it was first in the entire country.

The forests that once covered the entire state were a source of much wealth. The cutting of the forests, except on the highest and roughest land where it did not pay to cut them, finally put an end to the great lumber industry. Lumbermen were forced to settle on farms, find new work in towns, or move to forested regions farther west where lumbermen were needed.

Many settlements that had been started by logging camps and sawmills were deserted as lumbermen moved on to new forests. Many other old lumber towns still are important, even though the timber on which they first depended was all cut long ago. These towns lived on because the people in them found new ways of making a living.

In a general way, the story of the growth and decline of logging and lumbering in New York was like the story of the same industry in other parts of the country. In most areas the use of forests in times past meant forest destruction.

Farms and farmers. Most of the people of New York in early days were farmers. They cleared land or else took up land already cut over by lumbermen. Like the lum-

bermen, they spread from the lower Hudson into all parts of the state except the most rugged uplands. Of course, farming did not spread out nearly as rapidly as fur trading and lumbering had done. Albany was more than 250 years old when the farm population was largest and the number of acres being farmed was greatest.

Early farm life in New York was much like that in inland New England. Each farm family supplied its own needs as largely as possible. Crops were used almost entirely on the farms. No money crops were raised. People wore homespun clothes and homemade shoes or boots. Wooden pegs were commonly used in place of nails for building purposes. Pioneer farm life was simple and hard.

As in New England, many small farm villages were founded. Some grew up where sawmills had been built by lumbermen. Many villages had gristmills. Many also had tanneries. A farmer gave part of his grain and part of his hides to the village miller and tanner as pay for the work which they did for him. Such small neighborhood industries were really a part of early farm life.

An end to pioneer life. Great changes took place after canals and, later, railroads were built in the lowland L and some of the bordering areas. Better transportation gradually brought an end to pioneer life. Farmers changed to money crops. Many moved from poor land to better land. Much poor land was abandoned. More and more, farmers turned to products for which their land was suited and which found ready sale in the cities. Dairy farming and fruit farming became important. Farm people bought the manufactured goods which the growing cities of the lowland supplied.

Most of the small mills and factories in the farm villages closed. Figure 18 shows an old gristmill that seems about to tumble down. It once had a lively trade. Such mills could not compete with the mills in the cities.



From "Picturesque America"

Figure 18. An old gristmill

In time, most of them were torn down. Little or nothing remained where they had stood to recall the part they had played in pioneer life.

Farm population and farm acreage decreased. People drifted to the cities. So it came about that modern transportation helped to change many things in many ways.

The Erie Canal. In the year 1825 a great event took place in New York. It was the opening of the Erie Canal. The canal connected Albany and Buffalo and gave New York an all-water route between the ocean and the Great Lakes.

The canal quickly became a busy waterway. Some 50 freight boats and several packets, as the passenger boats were called, left Albany each day during the very first season after the canal was finished. An equal number left Buffalo, eastbound.

Figure 19 shows a packet on the canal. It was about 80 feet long and looked "not unlike a Noah's ark." On the deck was a long, low house, with a flat roof. Along each side of the house was a row of windows which had green blinds and red curtains. A long room served as cabin and dining room by day and as bedroom by night. At the rear of the packet was the kitchen.

Each evening at nine o'clock the steward and his helpers put up 36 berths in the big room, 18 on a side, in three rows one above

another. Each berth was a strip of canvas, nailed over a stout wooden frame. The frame rested on two iron rods. The rods were fitted at one end into holes in the side wall and held up at the other end by ropes which were tied to rings in the ceiling. If there were more passengers than berths, as often happened, some of the men slept on the dining table or on the floor.

When the weather was fine, passengers often gathered on the roof to visit, read, or look at the towns and countryside along the canal. When the man at the helm shouted "Bridge! bridge!" they hurried down the steps into the cabin and stayed there until the packet had passed under the bridge.

A canal packet was pulled along by three horses, walking or trotting one behind another on the "towpath" at the side of the canal. The horses were changed every eight miles. About four days were required for the boat trip of 363 miles between Albany and

Buffalo. Freight boats usually took longer.

Changes made by the canal. The canal greatly reduced the cost of traveling and of shipping freight. That is why it was so important. New villages sprang up along its banks, from end to end. New businesses were started. New mills and factories were built. Cash-crop farming replaced pioneer farming in the lands bordering the canal and its branches. The canal helped the settlement of the Great Lakes region, especially after steamboats appeared on the Lakes. Buffalo, where canal boats and lake steamers met, became a great transfer point for passengers and freight. And all this had a magical effect on the growth of New York City in population and trade. It became the port of the nation.

The best means of transportation at one time may be a poor way at a later time. Railroads were built across New York and year by year they were improved. Small, slow-

[22]

Figure 19. A trip on the Erie Canal



moving canal boats could not compete with big, fast-moving trains. The glory of the old canal departed. It had played its part, a great part, in the development of the state. But the canal was not abandoned as a state highway. The people voted to enlarge and improve it. In this manner the famous old canal was given a new lease on life.

On Manhattan Island. Manhattan Island, at the mouth of the Hudson River, contains only about 15,000 acres. There are ranches in the western part of the country which are far larger. But the size of a land area may have little to do with its importance. Manhattan Island is the home of about two million people. It has the busiest railroad station in the country, the tallest building, the largest store, the largest theater, the largest bank. It has, indeed, the biggest of many things. It is the heart of New York City, which has the biggest population of any city in the United States.

A visitor to Manhattan Island today, passing its skyscrapers on crowded streets, would find it hard to picture in his mind the early village from which the mighty city has grown. This village is shown in Figure 20. It stood at the southern end of the island. Most of the island had a rolling surface and was partly covered by trees, with here and there a pond or swamp. There were only a few streets in the village. They were deep in mud in wet weather. Along them lanterns were hung out on dark nights. Most of the houses were built of wood cut on the island.

Near the southwestern corner of the island was a fort with earthen walls. In the picture a flag flies above the fort. Behind the walls some small brass cannon were mounted. The fort was intended to protect the mouth of the Hudson and the village itself against hostile ships. For protection against Indians, a wall was built entirely across the island. It shows plainly in the picture. Wall Street,

[23]

Based on several early sketches





Figure 20. New York City when young

Courtesy Museum of the City of New York

famous everywhere, today follows the line of the old wall. Northward from the fort to the wall and onward past a group of farms ran The Long Highway. It, too, shows plainly in the picture. It is now Broadway, also famous everywhere.

The fur trade was the main support of this early village on Manhattan. Near the village were some orchards and some farms, on which vegetables, grain, and tobacco were grown.

The village of 300 years ago showed no signs of future greatness. But time has shown that the island on which it stood had undreamed of advantages for city growth. Above all, it was at the ocean end of the great lowland that was to become "the eastern gateway of the United States."

Things to Remember about our Country

1. During the 200 years when people in New England were "facing the ocean," other people pushed their way into and across New York. Describe the lowland that helped them do this.

2. A great fur trade grew up and later almost stopped. What things helped it to grow? Why did it almost stop?

3. The story of lumbermen in New York was like the story of the trappers and fur traders in several ways. Tell three of those ways. Why did logging later almost stop?

4. Farmers followed the lumbermen. How was early farming like that in New England?

5. Soon after the first 200 years ended, the Erie Canal was opened (1825), and brought about great changes. How and why has farming changed since then? Tell about other changes.

6. At the ocean end of the great gateway lowland, New York became a giant city. How did this location help the city to grow?

Exploring and Finding for Ourselves

1. Use the maps in Figures 7 and 15 to show why Albany was a fur and lumber center.

2. Find (Fig. 7) parts of New York more than 2000 feet high. What is told on pages 20-21 about these "most rugged uplands"?

3. The next story is about settlers near Chesapeake Bay. Find this big bay in Figure 7.

The Tobacco Country

Facing the rivers. Early settlers in the lowland west of lower Chesapeake Bay, shown on the map on this page, lived along the banks of the rivers. After the land along the lower parts of the larger rivers was settled, newcomers took up land on the smaller streams that flowed into them. The lands between the streams and farthest away from them were the last parts of the lowland to be settled.

The main rivers and their larger branches served as ready-made highways. Ships could sail up the lower James River, for instance, to any plantation on either bank. Laws were passed for the care and protection of the river highways. Logs and trees that fell into the water were to be taken out at once. No ship crew could dump into a river channel anything that might interfere with navigation.

For a hundred years or more most travel in the lowland was by boat. People wanted land facing the rivers just because they were highways.

The oldest settlement. The first permanent English settlement in America was founded on the James River in 1607. It was named Jamestown, and was at the place shown on the map. Jamestown was always a small village and was nearly destroyed several times by fire or foe. It fell into rapid decay when not quite 100 years old. In time the place was deserted and was taken over by scrub trees, bushes, or marsh grass.

Some years ago the ground was cleared and the top earth carefully shifted from one plot to another. In this way government explorers discovered the foundations of old buildings and the lines of old streets. They found, too, such things as glassware, kitchen utensils, and farm tools. These objects will be kept in a museum. Accurate maps will show the layout of the famous old village of long ago.

Jamestown was built on a peninsula. Much later, the river cut through the narrow neck of the peninsula and so made an island. Ever since, the place has been called Jamestown Island. The water which almost surrounded the old village on the peninsula gave the settlers some feeling of safety.

In almost all ways the peninsula was a poor place for a settlement. The land was low. Much of it was marshy or swampy, and it was heavily wooded. The water was bad to drink. The marshes and swamps were breeding places for mosquitoes. Jamestown was unhealthful. There was always much sickness among the people. The soil on the peninsula and near it was rather poor, and the settlers had no sure means of support. They did not know at first what crops might be suited to the climate and soil. For various reasons, then, the outlook for Jamestown through several years was very gloomy.

A new crop, tobacco, brought new hope. It also brought bright prospects to later settlements in better places along the river. The trying days of uncertainty about earning a living in that strange, wild country were over.

Figure 21. The old Tobacco Country





Tobacco, the export crop. Tobacco paid better than any other crop that could have been grown in the Chesapeake lowland. It was in great demand in Europe. It brought good prices in most years. At the docks of the plantations the tobacco was loaded on ships that sailed directly to European ports. Each planter exchanged tobacco at his own river front for goods he had ordered the year before. Tobacco was used in place of money in the settlements. Taxes and debts of all sorts were paid with it. For many reasons, then, tobacco became the main crop.

Within a few years after tobacco plants were first set out at Jamestown, almost all newly-cleared land up and down the James, and later that along other rivers, was being used to grow tobacco. So it was for many years. The exports grew as settlements spread and more and more land was used for tobacco. In some years more than one hundred ships, carrying millions of pounds of tobacco, sailed away from Chesapeake Bay.

Riverside plantations. When the growing of tobacco was at its peak, the plantations along the rivers were big and prosperous. Several things about these plantations are shown in the picture on the opposite page.

Many planters had houses that were built of imported hard brick. The rooms were large and richly furnished. The houses stood on rising ground well back from the water. Between the houses and the shore there were gardens with flowers and bushes. Back of each mansion were the simple cabins of the slaves.

Behind the buildings and fields of every plantation was the dark forest that once had covered all the land. Here and there at the edge of the timber was stump-dotted ground that had been cleared recently. The forest was the enemy of the planter. It had to be cut away, acre by acre, before the land could be used.

Cleared land was used first for three or four crops of tobacco, the second of which

was likely to be best. After the same land was no longer put in tobacco, two or three crops of corn, wheat, or vegetables were grown on this land for use on the plantation. After that, the land was left to any weeds or brush that might grow there. On every plantation, land being made ready for use, land in use, and land no longer used could be seen.

The all-important crop. A planter or his plantation manager gave most attention, of course, to the all-important tobacco crop. The plants were raised from seed sown in nursery beds. In May the young plants were set out in rows in the fields. They were put in little hillocks, three or four feet apart. The crop required much care. Dying plants had to be replaced. Worms had to be picked from the leaves. Weeds had to be killed again and again by hoeing. By late July or August the plants were ready to be cut.

When harvested, the leaves were hung in "tobacco houses" to cure. This curing process commonly took a month to six weeks. To help the curing, the tobacco houses were made as open and airy as the need for protection against rain permitted. When cured, the tobacco was ready to be packed in large barrels, called hogsheads, and shipped. It might be shipped away at any time during the autumn or winter, whenever the tobacco ship came with which the planter had dealings.

"Cut down, wear out, walk off." The early tobacco planters of the Chesapeake lowland used land in a way that has been called a system of "cut down, wear out, and walk off." By this it is meant that they cut down forest trees, wore out the soil in a few years, and then walked off to new land to repeat the process. But the methods they used paid well. They wanted big crops of good tobacco. They wanted to make as much profit as they could as soon as they could. Land was cheap. It did not seem worth while to most early planters to use it carefully, so that it might grow crops for many years.

The time came at last when little new land

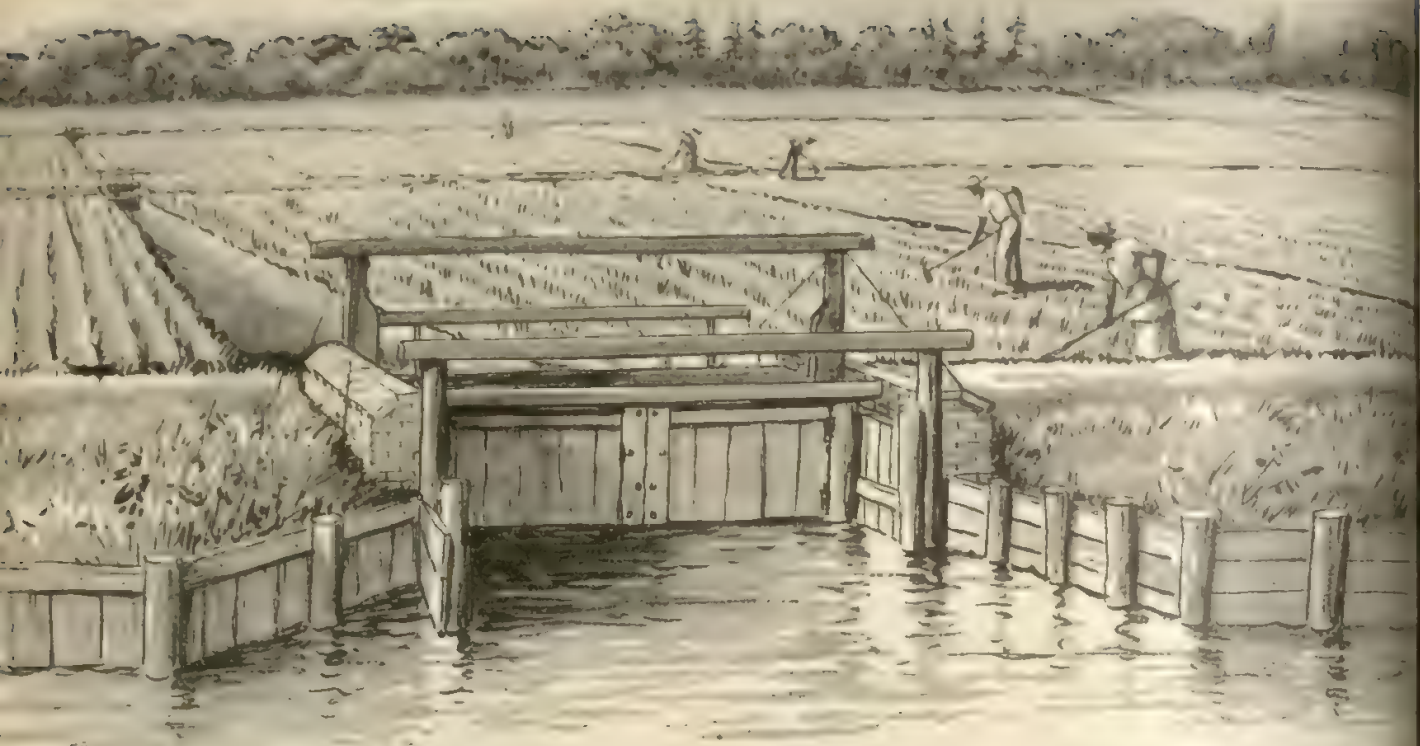


Figure 23. On a rice plantation

Based on several early sketches

suited for tobacco was to be found in the Chesapeake lowland. It was harder and harder to compete with fresh and fertile tobacco lands farther west. Many people moved away. Most of those who stayed turned to grain farming. Corn and wheat became leading crops. Abandoned fields were fertilized and used again. Plantations were broken up into farms. New ways of living and working and using the land replaced old ways. The story of "the tobacco country" was ended.

Things to Remember about our Country

1. While early settlements were being made along the coast in New England and in the eastern part of the L-shaped lowland in New York, people also were settling along the rivers west of lower Chesapeake Bay. These rivers flow across the _____ west of this bay. The larger streams were good _____. Land along the _____ parts of them was settled first.

What words belong in the three blanks?

2. The oldest settlement had a hard time for a few years, but it lived on for almost 100 years. Why did it have a hard time at first? What then happened which helped it?

3. Raising tobacco was the chief work of early settlers in this Chesapeake lowland. What things helped to make tobacco farming pay there? Tell about the work from planting to packing.

4. Planters used land in ways that harmed it and tobacco farming was becoming less important there when 150 years had passed. Explain "cut down, wear out, and walk off," using the picture on page 26.

Exploring and Finding for Ourselves

1. In what state is most of the lowland west of lower Chesapeake Bay (Fig. 7)?

2. In early days, no large city grew in this lowland. The rivers and the way trade was carried on help to explain this. Tell how.

3. Before beginning the next story, find the city of Charleston, South Carolina, on the map in Figure 7.

Glimpses of the Oldest South

The rice plantations. A ship in distress put into the harbor of Charleston, South Caro-

lina. The ship's cook had some unhusked rice which he had brought from an island in the Indian Ocean. He gave part of the rice to the governor of the colony. The governor planted it. In this way, according to an old story, rice first came to the South. That was more than 250 years ago.

From Charleston, rice plantations spread up and down the coast of South Carolina and then along the coast of Georgia. The picture on page 28 shows the rice fields on one of the big plantations near the coast. It shows several of the things that the following paragraphs tell about.

Rice and slaves. White men could not work in the low, hot, unhealthful coastal lands. Negro slaves were brought from Africa and the West Indies to do the work. The rice industry and slavery grew and spread together in the region. Each helped the other.

Rice and water. Rice is a water-loving plant. It could be grown well only on lands so low that they could be flooded. All such lands were swamp lands along the streams near their mouths, where the level of the water in the channels changed with the rise and fall of the tides.

From swamps to rice fields. In making a rice plantation from swamp land, many things had to be done. Dikes were built to keep back water when it would not be wanted. The swampy land behind the dikes was drained. The trees, except perhaps the larger ones, were cut down and burned. Next the cleared land was divided into fields.

Large ditches were dug between the fields. The earth that was taken from the ditches was used to build low ridges, called embankments, beside them. These embankments

made it possible later to flood each field separately. Small drainage ditches were made inside of the fields.

On a big plantation, a canal was dug to carry water to the fields farthest from the stream that gave the plantation its supply of water. Floodgates were built and put in place along the irrigation ditches. When opened, a gate let water enter a field. When closed, as in the picture, it kept water out. To turn raw swamp land into a rice plantation required much hard work.

Raising a crop. Early each spring the slaves began their work in the rice fields. The ditches were cleaned out. The embankments were strengthened where necessary. The floodgates were repaired if they were out of order. The fields were hoed.

Planting time came in April and early May. The seeds were dropped in rows in shallow furrows. Water was then let into the fields and kept there until the rice sprouted.

This first water was called the "sprout water." After it was drawn off, the fields were left uncovered until young plants appeared above ground.

Then the floodgates were opened again to let in more water. This water not only nourished the rice plants but also killed grass and weeds that had come up with them. It was drawn off when the plants were several inches high.

As soon as the ground was dry enough, it was hoed twice between the rows. Afterward it was flooded for several weeks, drained, and hoed again. Finally, the "harvest water" was let in, to stand on the fields until the rice ripened. Then the water was drawn off for the last time.

Gathering the crop. Just as soon as the ground dried out enough the harvest began.

This was about six months after planting. The slaves, both men and women, cut the plants with sickles, a foot or so above the ground. The stalks were laid across the tall stubble, so they would dry quickly. Two or three days later they were carried to a barn or to a yard where they were stacked.

Harvest work was rush work. Before the crop was out of the fields, the sky might be darkened by countless bobolinks. They were called rice birds because of their fondness for the grain. The birds were winging their way southward ahead of winter in the northern lands where they had passed the summer. They would cling to the rice stalks and with their beaks press the rice from the husks. Sometimes slaves were posted in the fields before harvest to frighten the birds away by firing guns.

Threshing the rice. Threshing began right after harvest. First the stalks, piled on the ground, were pounded by hand with sticks, called flails. This was done to jar the rice loose. Then the rice, mixed with chaff, was carried up a ladder to a platform about twenty feet high. From the platform it was slowly poured down. The wind carried the light chaff away and the rice formed a pile on the ground.

The grains of rice were still in their tight husks. Much rice was sold in the husk. Some was pounded by hand in wooden bowls. Some was put through a hulling machine which pounded the grain lightly so as to crack the husks without breaking the rice.

From rice fields back to swamps. For a long time the rice plantations prospered. But there were risks. Now and then a flood or a drought damaged or destroyed a crop. Good overseers, as men who directed the plantation work were called, were hard to get and hard to keep. Yields on many plantations got smaller as the soil became less and less rich.

Finally the slaves were freed. After that it was hard or impossible to get laborers. Without plenty of cheap labor a plantation could

not be worked. Many planters were ruined. Many deserted rice fields returned slowly to the kind of land from which they had been made. Once more they were swamp lands. The easy life of the rice planters of early days was only a memory.

A famous old city. Here and there along the southeastern coast, towns were laid out in early days. Seaports were needed where ships could load and unload, for the rivers were not good natural highways like the rivers of the Chesapeake lowland. Each town on the coast hoped to become a lively trading center. But only a few of them ever became important. The largest today is Savannah, Figure 7.

As a young village, Savannah looked about as shown in the picture. It was on top of a bluff which overlooked the Savannah River some 16 miles from the ocean. That was a good place for a town. The land back of the bluff was nearly level and well drained. Springs supplied plenty of good water for drinking and cooking. Cattle could graze safely on an island in front of the town. And the river, it was expected, would draw more and more trade to Savannah.

The river was not, though, an easy highway. It took two weeks to push a small boat upstream, with poles, from Savannah to the falls in the river at the edge of the hill country.

For some years Savannah was a small village that depended on its fringe of gardens and farms. There was very little trade. But trade grew as settlement spread in the back country. Year by year more ships came to the river front below the town. They unloaded furniture, ironware, clothing, and other goods. They loaded furs and deerskins, lumber, rice, indigo, and cotton.

Trade was dull during the hot summer, but brisk in the cool winter. The main streets might then be full of loaded wagons from plantations and farms. The short water front might be crowded with small boats from the



Figure 24. Early Savannah

From an old print

many streams and shallow coastal lakes. A dozen ships or more, flying the flags of several countries, might be anchored in the river at one time. Through the years Savannah grew with its trade.

The houses of the early village were made with hand-sawed boards. They stood on large lots, facing straight wide streets. The street pattern was like a checkerboard, one side of which ran along the river bluff. This town plan was kept in later years with little change.

The board houses of the early village gave place long ago to brick houses. Many of these houses are still used. Since they were built, styles in homes have changed time and again. But even today these attractive old dwellings are famous far and near. Of course, not all parts of Savannah are attractive. Many people now live on narrow streets in plain and crowded homes.

There is much in Savannah that is new, but also much that is old. There are new industries, but the city depends today, as always, chiefly on trade. There are new ways

of living, as elsewhere, but the city keeps many of its old ways of life. Savannah is indeed "a famous old city."

Pioneers in the hill country. Between the southern Appalachian Mountains and the low plain that borders the ocean, there is a broad belt of rolling hills and winding valleys. This hill country is called the Piedmont Plateau, a name which means the plateau at the foot of the mountains. The forest that covered the plateau when settlers came had trees of many kinds. There was game of many kinds, too, and the streams were rich in fish and waterfowl.

Some who settled in the hill country had landed at Charleston. Many more had landed at Philadelphia, hundreds of miles to the north. Wherever they landed, they wanted a free life on free land. They were willing to go deep into the wilderness, far beyond older settlements.

These bold pioneers built their log cabins in the forest, and lived at first largely on fish and game. As soon as possible they cleared

land for crops, and built rail fences around their fields. They raised small crops of barley, wheat, rye, hemp, flax, corn, and vegetables. They also raised cattle, horses, sheep, and hogs. Their clothing and tools were home-made.

In time, there were settlements of such farmers, with here and there a village, scattered throughout the southern Piedmont Plateau, from Virginia to Georgia. These people learned all the ways of backwoods life. Their descendants were pioneers in later years on other frontiers, farther and farther west.

Poor roads and the long distance to outside markets helped to make progress slow in the Piedmont Plateau. Grain could not be hauled to a seaport or even to some navigable east-flowing river. So there was little trade with the outside world. But each spring, after planting time, men went from some of the settlements to the coast with furs and cattle to sell. The furs were valuable. The cattle walked. The men took back such things as ammunition, salt, and medicines. Places for some of the Piedmont settlements were chosen with this trip to the coast in mind. These settlements were built where the trip back and forth each year would not be too hard.

Finally, planters came with their slaves into parts of the Piedmont to get land and grow cotton. Men who were engaged in commerce then became interested in the plateau. Transportation was improved. But many of the earlier settlers were unable and unwilling to own slaves and grow cotton. They were also unwilling to compete with slave labor. They sold out to the planters

and moved beyond the mountains. A new chapter opened in the life of the hill country.

Things to Remember about our Country

1. *More than 250 years ago, settlers in South Carolina began to grow rice. That was not many years after the first settlement there (1670). Along what did the rice plantations spread?*

2. *The rice lands were made from swamps. Tell why. Where were all these swamp lands? Tell the things that had to be done to turn swamp lands into rice lands.*

3. *Many slaves were brought to work on the rice plantations. Tell why. Tell about their work from planting through threshing.*

4. *For a long time, rice growing was successful. But before 200 years passed, many rice lands were deserted. What did they become? What things ruined the rice industry?*

5. *Savannah became in time the largest seaport. What things helped it to grow?*

6. *Early life in the Piedmont was very different from early life near the coast. Tell how it was different and give reasons.*

Exploring and Finding for Ourselves

1. What do these words mean? Embankments. Floodgates. Piedmont.

2. Find Philadelphia on the map (Fig. 7). Which is wider, the lowland along the coast northeast of it, or the lowland along the coast south of it?

3. Where is the wider part of the Piedmont?

4. The map (Fig. 7) shows that Savannah is about 32° north of the equator. About how far north of the equator is Boston? About how far north of Savannah is Boston (p. 7)?

5. How does that help to explain different ways of living in those two places?

6. Where did nearly all the settlers in our country live even in 1789 (p. 10)?



Figure 25. In the Appalachian Barrier

© Elliot Lyman Fisher

A Mountain Barrier

Blocking the way. The Appalachian Mountains, Figure 7, were once a great barrier in the way of people. Many people were afraid of them. It is hard to understand this today. We can now fly over the mountains swiftly in an airplane. We can cross them easily in many places by train or automobile. Many people live in them. Every year many other people visit them. They contain public parks, such as the famous Smoky Mountain National Park, and many hotels for tourists. They are beautiful mountains, as the picture suggests. And they are often called "friendly mountains."

No one would have called the Appalachians

friendly mountains when Americans first wanted to cross them. Daniel Boone, a bold frontiersman, said of the slopes of one of the ridges, "It is impossible to behold them without terror." For years, there were only a few routes across the mountains that could be used even by explorers on foot or by fur traders with pack animals. Many more years passed before any of the mountain trails became roads fit for wagons.

There really were very good reasons why the Appalachians were a great barrier in early days. They were made up of ridge after ridge, one beyond another. Several can be seen in the picture. The slopes of the ridges

were steep. Their tops were not very high, but they were broken by few deep gaps. The gaps which people could use in crossing different ridges were not, in most cases, opposite one another. So any possible way through the gaps and between the ridges made a winding, crooked route. And every route was rough and steep in many places.

There were even more reasons. All the ridges and mountain valleys were covered by a heavy forest. In most of the forest, there was a dense undergrowth. This mountain wilderness stretched all the way from the great lowland in New York to the northern part of Georgia. The barrier was wide, too. The rough plateau just west of the mountains was really a part of the barrier.

Many things in the mountains remain unchanged. For instance, the number of ridges and of gaps cut by rivers is the same. But men have reduced or overcome the difficulties of travel and transportation along many routes through the mountains. People no longer think of them as a barrier between the seacoast and the Mississippi Valley. And so it is hard to realize how men once thought about them. It is hard to realize how they helped to delay the spread of settlements toward the west.

Breaking through. Fur traders were the first white men to go back and forth across the Appalachian Mountains. They took goods on pack horses to Indian villages beyond the mountains and brought back furs and deerskins.

Explorers and traders told glowing stories of the western country they visited. More and more people talked of it as a land of opportunity. Many made plans to cross the difficult mountains to settle along the pleasant river valleys in this land of promise. They began to go about the time the colonists along the coast declared their independence.

There were only a few routes through the mountains that these early homeseekers could follow. Really only three were used by large

numbers of them. The picture on the opposite page shows Cumberland Gap, in the southeastern corner of Kentucky. Some pioneers are making their way toward the gap. They are bound for the new country beyond the mountains. In early days Cumberland Gap was the most important gap in all the Appalachians. Through it ran the most used route to the West.

Years passed before wagons could be driven all the way across the mountains on any of the routes. Meanwhile, what a family could not carry or take on a few pack animals it left behind. A traveler wrote the following description of one family he saw on its way westward.

"I noticed particularly one family of about twelve in number. The man carried an ax and gun on his shoulders,—the wife, the rim of a spinning-wheel in one hand, and a loaf of bread in another. Several little boys and girls, each with a bundle, according to their size. Two poor horses, each heavily loaded with some poor necessities. On the top of the baggage of one was an infant, rocked to sleep in a kind of wicker cage, lashed securely to the horse. A cow formed one of the company A bed-cord was wound around her horns, and a bag of meat on her back."

The "necessaries" of which the traveler wrote probably included a frying pan or iron pot, some salt, flour, clothing, blankets, and tools, a few simple medicines, a little seed, and, of course, ammunition. For food, the family must have depended chiefly on hunting and fishing along the way. At best, the earlier settlers met with many hardships during the long trip across the mountains.

Pouring through. Little by little, the main mountain routes were made better here and there. Low places were filled. Rough, steep places were graded. Wagons could be driven all the way to Pittsburgh in the north or to central Kentucky in the south. Summer and autumn were the seasons when the mountain roads were in best condition. Then





Figure 27. A home in a mountain cove

hundreds and, in later years, thousands of wagons rumbled westward.

Wagon companies hauled both people and freight over the mountains. They charged passengers according to their weight. Inns were built along the mountain roads. Mountain travel was still not easy, but the worst days were over. The early westward trickle of settlers had become a flood.

In a mountain cove. Figure 27 shows a lonely cabin that stands today near the head of a small valley, or cove, in the southern Appalachians. There are thousands of homes like this one scattered through the mountains in out-of-the-way places. The people who live in them are descendants of pioneers who made their way gradually into the depths of the mountain wilderness. All down the years the ways of life in the coves have changed but little.

The cabin in the picture has two rooms. One room is used as kitchen and dining room, the other as bedroom and living room. The walls are unplastered and stained by wood smoke from the fireplace. Two beds, a table, and several chairs make up the furniture.

In the garden patches near the cabin,

potatoes, tobacco, cabbages, and beans are growing. The cleared land on the hillside behind the cabin is used for corn, the main crop. On the slope at the left a new clearing is being made. When the new land is ready for corn, the present corn field may be "rested" for several years.

This mountain family has a cow, some pigs, and a flock of chickens. A pig can get much of its own food in the woods. It grows to usable size in a short time. When a pig is killed, the family can use up the meat before it spoils. A beef is so large that some of it would spoil before it could be eaten by the family. It is easy to understand why pork and corn bread are common foods in such mountain homes.

For many miles around this home, no roads cross the steep slopes between the narrow valleys. The mountain barrier has not been wholly conquered.

Things to Remember about our Country

1. *In early days, the Appalachian Mountains were a great barrier in the way of people who wanted to move to "the West."* Tell five things that made them hard to cross. What was true, then, of "the West" in 1789 (p. 10)?
2. *More than 10 years before 1789, settlers had begun making their way with pack animals across the barrier, and after 1789, more and more people crossed it.* Tell of the hardships of this pack-animal travel.
3. *In later years, thousands of wagons rumbled westward over the few good mountain routes.* Why could wagons then be used?
4. *Yet even today, some parts of this barrier are hard to reach.* What kinds of homes are found in such parts of it? Tell why.

Exploring and Finding for Ourselves

Find in Figure 7 the part of "the West" (p. 10) shown in Figure 28. Most of the streams shown west of the great-barrier highland in Figure 28 flow into what river?

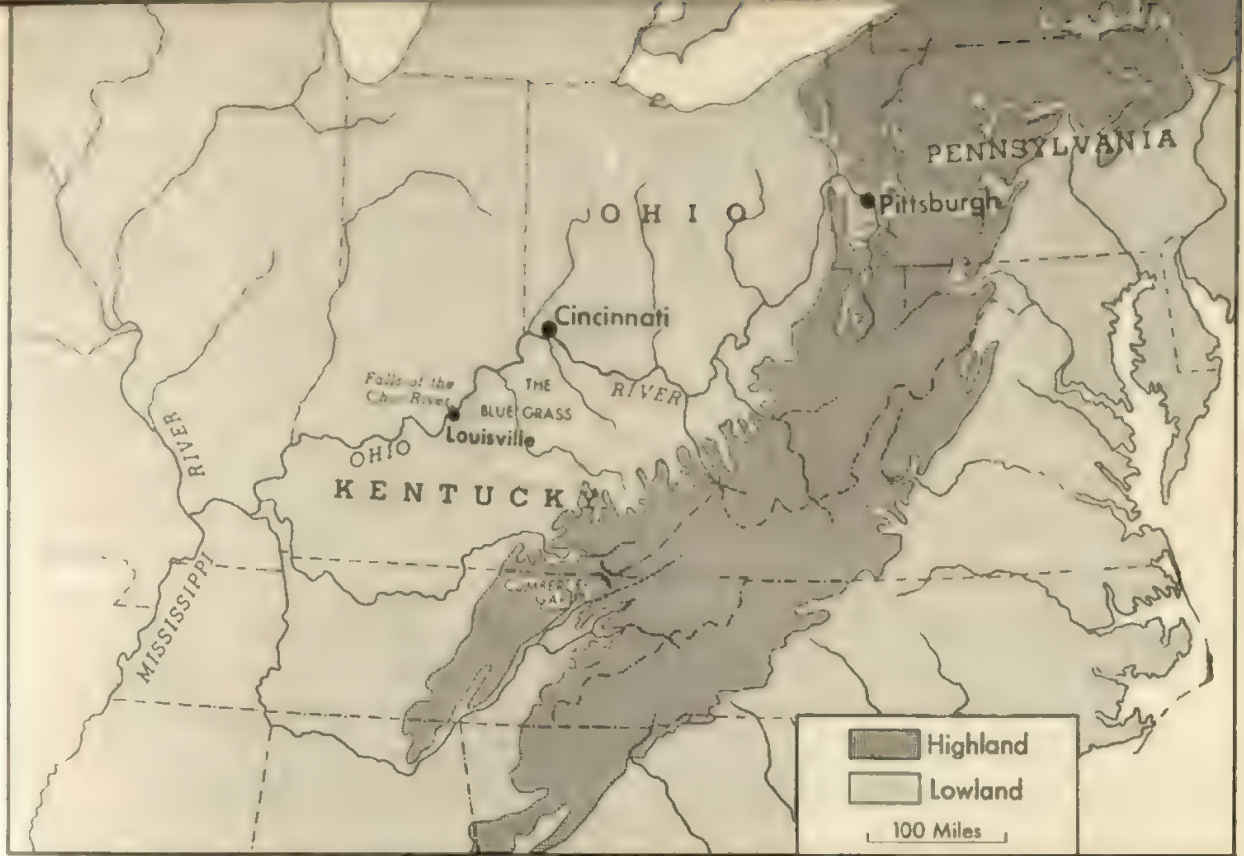


Figure 28. The great rivers beyond the Appalachian Barrier

Pioneer Life in the Ohio Valley

Kinds of pioneers. The map shows the Ohio River and its main branches. Three kinds of pioneers moved across the Appalachian barrier into the valleys of these rivers.

First there were hunter pioneers. They lived by hunting and trapping, and kept well beyond the settled areas. They were men with a restless, roving spirit who made long river trips by canoe or wandered from place to place in the trackless forest.

Next were the hunter-farmers. These men lived partly by hunting and partly by farming. They built log cabins, cleared a few acres for crops, and generally had some cattle and hogs. These hunter-farmers wanted plenty of "elbow room." When other people settled within a few miles, they thought the country was getting overcrowded. They were

likely then to move on, selling their land if they could. Stories of some new region having much game and good land might be enough to take them away. Many of them moved again and again, always toward the west. They took pride in being the westernmost members of their families.

Finally, there were pioneers who wanted to make permanent homes. Most of them were farmers. Some were storekeepers, carpenters, millers, and others who wanted to live in towns. The farmers looked forward to growing crops for sale—that is, to commercial farming. The others looked forward to trade or to manufacturing. They all saw the need of shipping points on the rivers and of good roads leading to them. They wanted more and more settlers to come.

Slow progress. The number of settlers in the Ohio Valley increased rapidly, but progress was slow in many ways. When the first settlements were more than forty years old, most of the people still needed several things very much. They needed a chance to sell farm products at good prices. They needed supplies of manufactured goods at lower cost. And they needed better and cheaper means of transportation..

Most progress was made where the soil was fertile, where the land was not too rough, and where trading centers on river highways were within reach. Chief among such areas were the valley bottoms of southwestern Pennsylvania, the famous Blue Grass region of central Kentucky, and, somewhat later, southwestern Ohio (Fig. 28). The people in these three areas played a large part in the pioneer life of the Ohio Valley.

The most important crop. Corn was the main food crop of all pioneer farmers in the Ohio Valley. Forest land could be made ready for the first crop of corn with less work than for most crops. The underbrush and smaller trees were cut down. When they had dried out enough, they were burned. The

larger trees were killed by cutting through the bark all around the trunks. If necessary, corn was planted without plowing the cleared ground, in little cuts in the soil. These cuts were made in rows as nearly straight as the tree stumps allowed.

Corn usually gave large yields where the soil was good. When ripe, it did not have to be picked at once. It could be left on the standing stalks in the field for weeks, or even months, without heavy loss. The men in the picture are husking corn. They had cut the plants and put them in big bundles, called shocks, weeks before.

Corn was stored easily. It kept well. It made nourishing food for people and stock. Not only part of the grain but also all of the plants except the stalks could be used as food for farm animals. Such scenes as that in Figure 30 held true for almost every farm.

For many reasons, then, corn was the chief crop of the pioneers.

Without corn, the Ohio Valley could not have been settled as rapidly as it was. Without corn, many pioneer farmers there must have failed. These same things were true in almost all of the eastern part of the country.

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Figure 29. Husking corn



The first money crop. Tobacco had been the first commercial crop on the seaboard. It was first also in the Ohio Valley. Many tobacco planters moved from Virginia to the Blue Grass, bringing their slaves with them. They bought the clearings of some of the hunter-farmers already there. They cleared new land. They found that the better soils of the Blue Grass gave large yields of fine tobacco. The tobacco was floated down the Ohio and Mississippi rivers on boats that resembled rafts. So it reached the ocean highways.

At first, the demand for tobacco was great in Europe and the prices paid for it were high. After some years, the demand in Europe became less and prices fell. Tobacco farming no longer paid in the Blue Grass. Tobacco fields were turned into pastures or were used for corn and other grain. Many years passed before tobacco again became a leading crop in the Blue Grass. Good tobacco could have been grown all along, but it could not have been grown with profit.

The ways in which farmers use their land may depend, then, on many things besides the soil and the climate. For instance, it had paid for a time to grow tobacco in the Blue Grass partly because a treaty with Spain opened the Mississippi River to use by Americans.

Other crops. More or less wheat was grown by the pioneer farmers. Many of them also grew a little flax. The farm women had small wheels for spinning it. From the beginning of settlement, some hemp was grown in the Blue Grass. It was used in making ropes and coarse cloth for bags. Of course, every pioneer farmer raised vegetables.

Cattle and hogs. In general, livestock could be marketed far easier than crops. After the first years cattle and hogs were driven across the mountains in large numbers to eastern markets.

Lean cattle were driven across the mountains from the Blue Grass to be fattened on



Figure 30. Feeding corn to hogs

Virginia farms on their way to Philadelphia and other places. Later, cattle were fattened on corn in southern Ohio and then driven in cool weather by easy stages to seaboard markets. They lost in weight on the way, of course, but the practice was followed for years. It was a means of changing surplus corn, which at times could not be sold in some places at any price, into beef, which could be marketed with a profit.

Hogs were driven not only to markets in the East but also to markets in the Southeast. Large quantities of pork and bacon were needed as food for slaves on the spreading cotton plantations of the Southeast. So many hogs went through Cumberland Gap that the famous Cumberland Gap Road of the west-bound pioneers frequently was called the "Kaintuck Hog Road."

Of course, much corn was fed to hogs. Most farmers, like the one in Figure 30, found that was the best way to use much of their crop.

Blue Grass horses. Horses also were driven through Cumberland Gap and on to Charleston and Savannah. Drove of twenty, thirty, or more saddle horses were taken there in early winter. That was the season when most business was done in all the southern coastal towns.

Horse racing was a favorite sport in the Blue Grass before the first settlements there were ten years old. It is still a favorite sport. The nourishing bluegrass which gives the region its name grows on the better soil of the Blue Grass. The pastures of bluegrass have been the homes of generations of famous thoroughbred horses.

Early manufactures. In the Ohio Valley, as elsewhere, pioneers made such things as cloth, clothing, and simple tools in their homes. In the villages there were men after a time who made guns, furniture, wagons, and simple farm implements. As years passed, some places, such as Pittsburgh and Cincinnati, became well known for certain industries.

Flour and whiskey. Some things, like flour and whiskey, were not made simply to meet the local demand for them. They also were made in order to send part of a surplus farm product to distant markets. Wheat could not be hauled across the mountains with profit or even be sent down the rivers to the Gulf of Mexico with profit. But it paid to send flour out by boat as soon as Americans got the right to use the Mississippi River. So gristmills were built at many places. Figure 31 shows the first gristmill that was built in Ohio. It was near the oldest settlement made in the Ohio Valley by people from New England.

Corn could not be hauled or shipped away either, but even before wagons crossed the mountains whiskey made from corn was taken over the mountains on pack horses. Much whiskey, made from corn in southwestern Pennsylvania, was taken in that way to Philadelphia. There it sold at good prices.

Salt in pioneer life. Goods from the East were expensive, of course, in the Ohio Valley. For instance, salt from the coast once was worth \$30 a bushel along the Monongahela. When it was measured out in some room, for division among a group of farmers, no one was allowed to walk across the floor. If the floor were to shake, the measure might not hold the same amount of salt as it did when the floor was still. So one farmer might get more salt than another who had a right to the same amount.

The pioneers could not get along without salt. They needed it to season food, preserve meats, and feed stock. Luckily, salt-water springs and deposits of salt were found in the Blue Grass and in other places. Some of the deposits were called "salt licks." That was because buffaloes and other wild animals had come to them to lick the salty earth. Salt works were started at various points and for years salt was peddled up and down the rivers. If these deposits had not been found, settlement in the Ohio Valley would have been much harder.

Shipbuilding. The strangest industry in the Ohio Valley in early days was the building of small sailing ships for use at sea. It was begun by shipbuilders from Boston who had settled on the upper Ohio River. They tried in their new home the kind of work they had done in their old home. For a time they were successful. Men in other river towns who followed their example also succeeded.

The finished ships started for the sea in spring. At that time melting snows and rains caused high water in the Ohio and Mississippi rivers. Some ships were stranded and lost on the way. No attempt was made to get any of them back upstream. It would have been impossible. Some were used in the West Indian trade and others in the coast-wise trade or the European trade. There were far better places, of course, to build sailing ships for ocean trade. After a few



Figure 31. The first gristmill in the Ohio Valley

From "The American Pioneer," 1843

years, the industry died out on the upper Ohio.

Early stores. The first stores in the Ohio Valley looked much like the one in the picture below. The stocks of goods were small. They were made up of things greatly needed by the pioneers. And the stores were places where people got news, as well as goods.

The great river. In the young country west of the mountains that men had called

a "land of promise," the Ohio was a river of promise. Most western farm products and most things that might be made from them could not reach large markets by land. They had to go by boat, if at all. Commercial farming and river trade depended on each other. They had to develop together.

The Ohio flowed in general westward for 900 miles to join the Mississippi River which, in turn, led southward to the sea. There

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Figure 32. An early country store

Based on several old sketches



were other navigable rivers in the areas of early settlement, but they were tributaries (branches) of the Ohio River. The Ohio was like the main street through some big town. The tributary rivers were the side streets.

No docks. Even the "main street," the Ohio, was not an ideal highway. There was a difference of some 40 feet between high water level and low water level. If docks and dock sheds had been built at the level of low water, they would have been covered by high water. If they had been built at or above the level of high water, they would have been some distance away from the river's edge at low water. And so fixed docks were out of the question. Without docks, the work of loading and unloading boats was greatly increased when river trade became active.

Rocks and rapids. Rock ledges in the channel near the head of the river were dangerous at low water. And there were rapids, called The Falls of the Ohio, in the lower river. Boats could pass through them only at middle and high levels of the river, by means of a narrow channel. Men called "falls pilots" would guide boats through the rapids. The fees they could charge were fixed by law. Most of the time boats had to be partly or wholly unloaded above or below the rapids, as the case might be. The cargoes were hauled by wagon past the rapids and then put aboard again. Finally, a canal was built around the rapids.

Troublesome currents. When the river was high, there were swift currents and whirling movements of the water. They were troublesome and even dangerous to men in crude boats who had not had experience on such a river. Upstream navigation, against the current, was slow and hard at best. It was impossible with some boats.

Floods. Much low land facing the river was under water during floods. When the river was very high, the floods spread over the entire bottom of the valley, from the bluff on one side to the bluff on the other

side. It was unsafe, of course, to settle on the valley bottom in the path of the floods. People built their homes there in spite of the risk, because the soil was fertile and they wanted to be close to the river highway.

Flatboats. The most common kind of boat on the Ohio in pioneer days was the flatboat. Figure 33 is a sketch of one of them. On a platform about 15 feet wide and 45 to 55 or more feet long was built a board house. There the owner and his family lived and stored their supplies. From the rear there extended a great oar, or "broad horn," by means of which the boat was steered.

At nightfall, boatmen usually tied their flatboat to a tree on the bank, as the men in the picture are doing. It was too risky to go ahead in the dark. A settler depended on his rifle for fresh meat while going down the river. At the end of the trip, he might use the boards from the house on his boat to make the roof, floor, and doors of a log cabin. Flatboats could not be used for trips upstream, against the current.

Keel boats. Boats called keel boats were also used on the Ohio River in early days. The keel boat took its name from a timber which ran from stem to stern along the center of the bottom and extended below the bottom. This timber was the *keel*. These boats were used to carry passengers and freight both downstream and upstream.

In going downstream, the boatmen might make 100 miles in a day when the river was swollen by rains and the current moved swiftly. In going upstream, they could make only a few miles a day by hard work.

A deck about six feet high gave shelter to passengers by night and a place to walk by day. The passengers slept on mattresses placed on the freight under the deck.

A troublesome friend. The pioneers found, then, that the Ohio River was troublesome in some ways. But it helped them far more than it harmed them. It was more a friend than a foe.



Figure 33. Tying up a flatboat for the night

Based on an old print

Most of all, the Ohio was a great highway. In some seasons more than one thousand boats were counted as they passed a town on the upper river, going downstream. Later, the river became the great outlet for western products. On its banks were the chief centers of early trade in the Ohio Valley—Pittsburgh, Cincinnati, and Louisville.

Pittsburgh. At the head of the Ohio River, where the Monongahela and Allegheny rivers join, is Pittsburgh (Fig. 28). Even as the small town shown in the picture, it was the eastern gateway to the Ohio Valley. There

people from east of the mountains could buy flatboats for the river trip westward. There they could buy ammunition, salt, implements, and provisions.

After the first years, too, things needed in settlements farther west, such as dry goods, tinware, pottery, drugs, and tea, were brought to Pittsburgh by wagon from the East. They usually were hauled there in autumn, when the mountain roads were in best shape. Then they were stored in Pittsburgh over winter, to be shipped on by boat the following spring, when the Ohio River was high.

[43]

Figure 34. Early Pittsburgh, at the head of the Ohio River

Based on an old drawing



So at Pittsburgh the wagons met the boats. It was a receiving point for land traffic and a shipping point for river traffic. Flatboats and other craft took on supplies or freight on the Monongahela side of the town. This is the near side in Figure 34. The Monongahela had a slower current than the Allegheny, and fewer floods.

Pittsburgh had advantages for manufacturing as well as for trade. Coal deposits near-by were known even before the town was founded. Iron ore was discovered not far away. There was pine timber to be had along the Allegheny and other timber along the Monongahela. Sawmills were erected at Pittsburgh. Boats were built. Barrels were made for flour, and kegs for whiskey. Shops were opened in which axes, scythes, and other tools were made. Nail factories and glass works met pressing needs. Most of the products were sent away by river. The air of the busy young town was often dirty with coal smoke. A story was told of a Pittsburgher who, going into the country for the first time in winter, exclaimed, "What white snow!"

Cincinnati. Halfway down the Ohio River a town was laid out that became the city of Cincinnati (Fig. 28). The place was near the northernmost point in a great bend in the river. Cincinnati was the nearest river town for a large and fertile region in southwestern Ohio. This region became the most thickly settled part of the state. All its main roads led to Cincinnati. By river Cincinnati shipped farm products and received implements and supplies.

Manufacturing was started in Cincinnati to change some of the farm products into their most valuable forms. The chief factories were flour mills, whiskey distilleries, and slaughtering and meat-packing houses. In late autumn and early winter, hogs were hauled or driven from the farms to the city, to be slaughtered there in cold weather. The hams, bacon and other pork products were shipped down the Ohio and Mississippi on

their way to southern plantations. This finally cut heavily into the business of driving hogs by land from the Ohio Valley to the South. For almost fifty years Cincinnati was the leading slaughtering and meat-packing place in the country. It was nicknamed "Porkopolis."

Louisville. The Falls of the Ohio made settlement certain where Louisville stands (Fig. 28). It was the place, already described, where freight moving past on the Ohio had to be shifted most of the time from river to land and then back from land to river. It was the place nearest the heart of the Blue Grass which had an unbroken water route to the sea. Between the Falls of the Ohio and the mouth of the Mississippi, there were no falls or rapids in the river channels. So Louisville became the chief shipping port for the Blue Grass, as well as a transfer point for through river traffic. For 75 years or more its growth and importance depended almost entirely on river trade.

For some years Louisville, like all the other river towns, was a crude frontier village. The houses were log cabins, chinked with clay. The boards of the roofs were held in place by poles. Some floors were bare ground, leveled and packed down. The first store was opened in a double log cabin. Goods for it were carried on pack horses from Philadelphia to Pittsburgh, and on flatboats from Pittsburgh to Louisville.

The building of a large tobacco warehouse at Louisville, when the village was little more than fifteen years old, marked the opening of a new chapter in the life of the place. Louisville knew then that it was to be the river outlet for the Blue Grass.

Laying the foundations. Pioneer life in the Ohio Valley was in many ways much like pioneer life in other parts of the country. It was simple and stern. It called for hard work, courage, and faith in the future. It meant conquering a wilderness. It meant making farms, building roads and bridges, founding towns, starting trade and manufac-

turing, opening schools and churches, and many other things. For a time, progress was slow. But it was sure. The pioneers were determined builders. They helped, in the Ohio Valley and everywhere, to lay the foundations of a great nation.

Things to Remember about our Country

1. *In the 30 years after 1789, great numbers of settlers came into the Ohio Valley. What kinds of places did they try to find? Name three areas in which many of them settled.*

2. *The pioneer farmers depended chiefly on raising corn. Give five reasons why corn was a good crop for them to raise.*

3. *Tobacco was a money crop raised in the Blue Grass region and sold in distant markets. How did the ways of tobacco planters in Virginia help to explain this work in Kentucky?*

4. *Much corn was fed to animals that were driven to eastern markets. Tell about the cattle drives and the hog drives.*

5. *Two products made from grain also were sold in distant markets. What were they?*

6. *Salt works were started at various places. Give three reasons.*

7. *The long Ohio River was a highway that was very useful even though in some ways it was not ideal. Tell four of those ways.*

8. *River trade was a very great help to the settlers. Tell about two early kinds of boats used in this trade. As trade grew, more and more of what kind of farming was done? How did that help trade?*

9. *The chief centers of river trade were the*

city at the eastern end of the Ohio, the city on a great bend in the river, and the city at the Falls of the Ohio. Name those cities. For each city, tell why its location was a good one for trade and other work done there.

Exploring and Finding for Ourselves



Figure 35. The United States in 1813

1. The darkest part of the map in Figure 35 shows what territory was in the United States in 1813. By looking carefully at that map and the one on page 10, find the territory that had been added since 1789.

2. All that new territory had been bought by the United States in 1803 except the little strip east of the Mississippi along the Gulf of Mexico. Soon after 1803, then, the United States controlled the Mississippi.

Find on page 40 a sentence telling one way in which control of the Mississippi River helped pioneers in the Ohio Valley.

The Land of Cotton

A great money crop. The simple machine shown in the picture below was one of the greatest inventions ever made in the United States. It was the first cotton gin. This machine separated the fiber of cotton, called cotton lint, from the seed. A man could separate with the machine many times as much lint in a day as he could separate by hand. So it cost less than before to produce cotton lint. And so cotton farming paid much better when a gin was used.

Several things besides the gin helped cotton farming. Millions of acres of good, cheap land in the South could be used for growing cotton. Many workers were needed to clear forested land and to plant, cultivate, and harvest the cotton. This need was met by using slaves. They got no wages, of course, and it cost little to keep them. As more and more land was put in cotton, more and more slaves were used to work the land.

England led all countries in making cotton goods. The British manufacturers were using new and better machinery and getting new and larger markets for their goods. They

wanted more and more American raw cotton for their mills. Later, the needs of mill towns in New England added to the demand. With a heavy demand, the price of cotton was high for many years.

The cotton gin and all these other things, acting together, made cotton a great money crop. In time it became the greatest crop in all the coastal states between North Carolina and Texas.

The march westward. While pioneer farming was spreading in the Ohio Valley, cotton farming was spreading in the South. Every year more new land was needed for it. Men thought it was better to go west to new land than to keep up the fertility of their old land by rotating cotton with other crops and by fertilizing. Indeed, most men felt that crops could not be rotated with slave labor. They knew a slave could learn to plant, cultivate, and harvest a crop of one kind. They believed he could not learn to raise crops of several kinds. Many men used most of their money to buy slaves, and of course the slaves could be moved easily.

When the yields from the poorer acres of a plantation in the Carolinas or eastern Georgia were no longer satisfactory, some change was needed. The owner might stay on with part of the family slaves to work the better acres, while his sons moved to new land with the rest of the slaves. A common sight on the roads leading to the west was the young planter "in his family carriage, with servants, packs of hunting dogs, and a train of slaves." In the picture on the opposite page, a young planter is leaving the home of his parents in South Carolina to start a new plantation farther west.

Where cotton grew best. The kinds of cotton grown in early days could be raised

Figure 36. The first cotton gin

Based on an old print in "Harper's Weekly"





Figure 37. Leaving the old family plantation

Based on several old drawings

only where the growing season was warm and at least six months long. It was necessary, too, that there be plenty of rain and that most of it come when water was needed by the growing plants. Much rain in the autumn during the cotton-picking season was harmful. Good weather conditions were found almost anywhere in the southern Piedmont, in the southern coastal plain along the Atlantic, and along the Gulf of Mexico.

Soils suited to cotton were not nearly so widespread. Cotton growers learned that on a heavy clay soil the plants grew large but did not make much lint. On coarse sandy soils, too, the yields were light. The best yields were from loamy soils. They were neither too fine nor too coarse. Such soils were found in belts above limestone, in many river valleys, and where the winds had left material that was between clay and sand in coarseness.

The westward-moving cotton growers settled in these areas of good cotton soils. In general, land with poor soil for cotton was

left to other uses even though the climate was suitable.

Other farmers and other work. In each of the cotton-growing states there were many farmers who did not own slaves and who did not grow cotton. Most of them, of course, lived on land not suited for cotton. They raised no money crop. Corn was their chief food crop. They raised hogs to get meat for their own use.

The people who lived in the pine forests of southern Alabama, southeastern Mississippi, and Louisiana, away from the rivers and the cotton lands along them, raised cattle for sale. Like backwoods farmers generally, most of these people lived very simply in log cabins or rough board houses. Many homes were far too small for the large families in them.

Little was tried in the way of manufacturing. The planters were interested only in cotton. Most of the other white people lacked the experience and the money that were

needed. Most of them, too, were not fitted in other ways to undertake manufacturing. So the South bought from the North or from abroad almost all the manufactured goods it used.

The city on the delta. The land of cotton was a land of plantations, farms, and villages. Charleston and Savannah, the Atlantic ports, and Mobile and New Orleans (Fig. 7), Gulf ports, were the only real cities. Away from the coast, most trading centers were mere villages. The larger ones were on streams which could be navigated at least by small boats.

In all the coastal region from North Carolina to Texas, the place that had the best chance for large growth in population and trade was New Orleans, on the delta of the Mississippi. New Orleans could draw on the trade of the entire Mississippi River system. No other place in the South had so great an advantage for trade.

New Orleans, Figure 38, was laid out nearly one hundred miles up river from the Gulf of Mexico. Even so, the land there was only about ten feet above the water in the Gulf. The Mississippi flowed past in a great bend and on a low ridge which it had made by its deposits in earlier times. All of New Orleans was lower than the Mississippi when

the river was high. Part of it was lower than the river at any time. This land was nearly level and poorly drained.

The greatest problem in early New Orleans was that of floods. For protection against them, a high dike, called a levee, was built. For added protection, some of the buildings were made on posts eight or more feet high. For a long time, though, more or less damage was done by floods almost every year.

Good water could not be had from wells, and so tanks were built to catch rain water for all household uses. Cellars were out of the question. They could not be kept dry. The river was too high for sewage to be drained into it. So the sewage was hauled away and dumped. The dirt streets were always deep in mud in rainy weather. For more than one hundred years only two of the streets were paved. There were no stones to be had for paving except those brought by ships. Ocean ships that came to the city without cargoes carried stones in their holds. The weight of the stones had helped to steady the ships when they were at sea.

In time the people of New Orleans solved these troublesome problems of early days. Of course, that took engineering skill and the spending of large sums of money. Most other cities on the deltas of great rivers have had such problems to solve.

New Orleans grew slowly for more than a hundred years. For all that time there was little trade on the Mississippi River to help it grow. And there were only narrow strips of settlement near-by, along the rivers. Then at last New Orleans grew rapidly. It more than doubled its population in ten years. No other important American city was then growing so fast. New Orleans had come to be well within the westward-spreading "land of cotton." Its busy water front was lined, as in the picture, with river steamboats. They brought from the North great quantities of supplies for distribution far and near. No

Figure 38. New Orleans, on the lower delta



GULF OF MEXICO



Figure 39. Busy days along the waterfront at New Orleans

Based on an old print

city gained more from steamboat days on the Mississippi.

Things to Remember about our Country

1. Only four years after 1789, a machine was invented that made cotton farming pay much better than it had before. What was the machine? Why did it save much hand work?

2. Planters then wanted more cotton land, and in the South cotton farming spread westward while pioneer farming was spreading in the Ohio Valley. What workers were taken along to help make new plantations?

What was there in Europe and later in New England that helped cotton farming to spread?

3. While plantations were spreading into areas well suited for raising cotton, pioneer farmers moved westward into other parts of the South. What things that cotton needs were found almost everywhere there? What thing it needs was found only in some areas?

How and why were the lives of the pioneer farmers unlike those of the cotton planters?

4. About 25 years after the United States got possession of the lower Mississippi River, New Orleans began to grow rapidly. It became the chief trade center in the vast "Land of Cotton." Tell about some of the early troubles of this delta city. Why was its location a good one for trade?

Exploring and Finding for Ourselves

1. How do the maps (Figs. 7 and 38) show that the Mississippi River has built a delta?

2. In what state is the source of the Mississippi? Is the source of the river nearer to the equator or to the North Pole?

3. What 10 states touch the Mississippi River?

4. The branches of the Mississippi reach into more than 10 other states. How many of those states can you find? What is the longest western branch of the Mississippi?



Figure 40. The first steamboat on the western waters

From an early drawing

Steamboat Days

The first western steamboat. The queer-looking steamboat in the picture was famous. It was built at Pittsburgh in 1811 and was the first steamboat made in the West. The machinery for the boat, which was called the *New Orleans*, was hauled over the Appalachian Mountains.

The *New Orleans* caused much wonder and excitement as it went down the Ohio and Mississippi rivers. Some people, seeing the boat at a distance, thought it was a saw-mill that had been washed away by the river and was floating downstream.

The *New Orleans* could not go beyond Louisville for about a month. The water in the rapids was too low. While waiting for high water, a trip was made back upstream to Cincinnati in order to show the unbelieving people that it could be done.

Finally, after many adventures, the *New Orleans* reached the place after which it was named. No attempt was made to go back to the Ohio. The boat was used in short runs to and from New Orleans.

Doubtful people. Most people in the river towns still doubted whether steamboats could solve their navigation problem. The West, they said, might have to wait for "a happier invention." But after six years the *Washington*, the ninth steamboat that was built, went from Louisville to New Orleans and back in 45 days. This removed all doubts, and soon there was great activity in steamboat building on the Ohio.

The need for steamboats. One good way to realize how much the western people needed steamboats is to remember the earlier boats they had. Before steamboats came into

use, the keel boat was the fastest means of river transport. But a keel took at least three months to go upstream from New Orleans to The Falls of the Ohio. In many cases the trip lasted four months.

In shallow water, setting poles were used. Each member of the crew put one end of a pole against his shoulder and the other end on the river bed. Then he tramped from bow to stern along the side of the keel boat, pushing on the pole. As he reached the end of the footway, he pulled his pole from the mud, hurried to his place in the bow, and again pushed his way to the stern.

Where the current was swift, the men used oars, rowing across the river and slightly upstream. Usually they made little headway at each crossing. Where it was possible to walk along the bank, part of the crew landed and with a long rope pulled the boat along.

Sometimes a keel was drawn along the shore by the men seizing hold of low branches overhead. This was called bush-whacking. When the wind was favorable, a sail was used. The boats were tied up at night and

whenever a strong head wind was blowing.

The time, labor, and expense necessary to get goods up the Mississippi, the Ohio, and other rivers in boats moved by poles, oars, ropes, and sails were too great to meet the needs of the people. Nor could keel boats and flatboats carry a large down-river trade. A far better means of using the rivers as two-way trade routes had to be found if the western people were to prosper. The need was great. The steamboat was the answer.

Changes with passing years. Year by year more steamboats were built. At one time over 1200 were in use. They were changed greatly from the earlier models, as the picture in Figure 41 suggests, in order to fit them better to the conditions of the rivers. Because of these changes, the later boats could carry much greater loads and make much faster time than the earlier ones. When a famous steamboat ran from New Orleans to Louisville in 4 days, 9 hours, and 19 minutes, newspapers said that time and space had been "annihilated"—reduced to nothing. It may easily have seemed so.

[51]

Figure 41. A later steamboat

Based on an old print

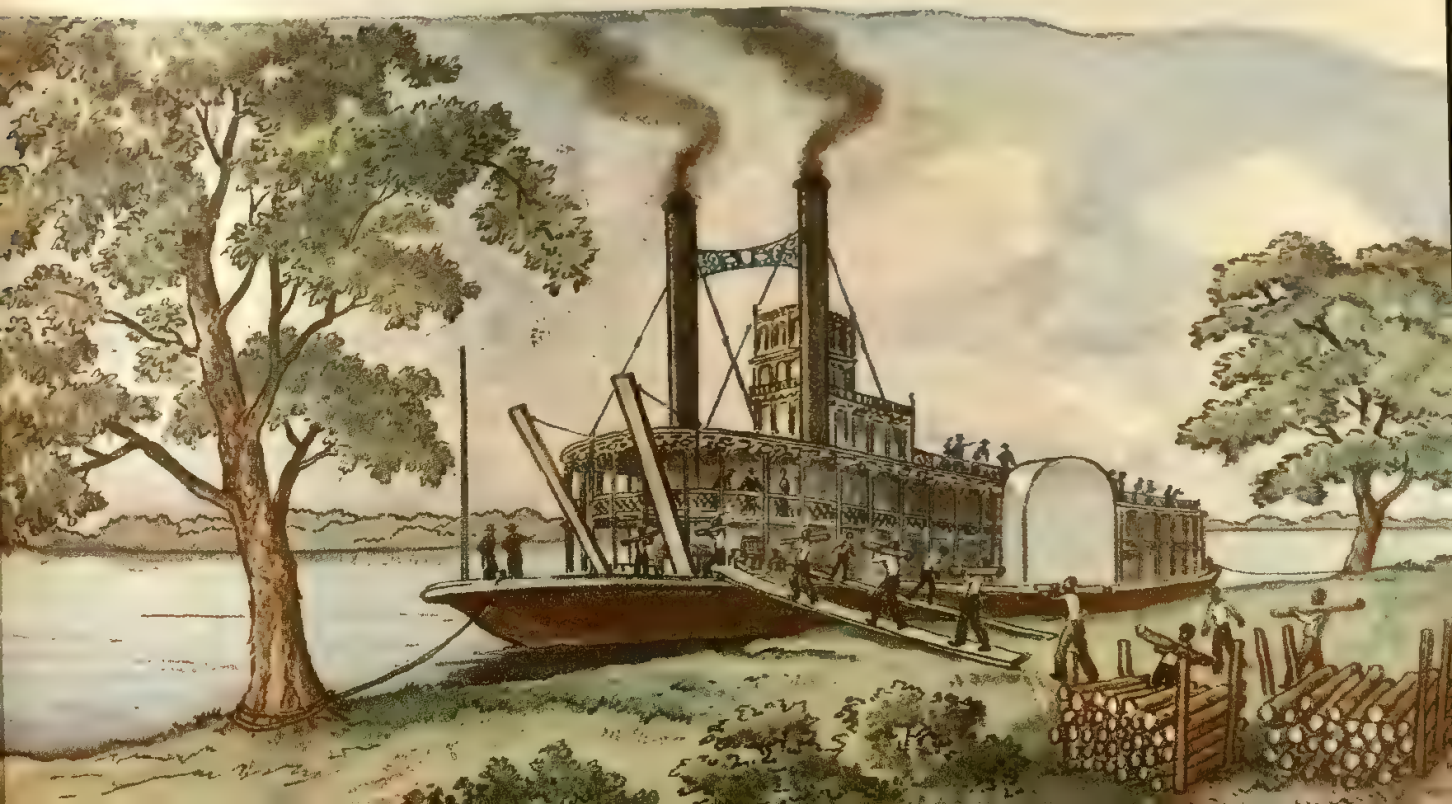




Figure 42. The river front at Louisville

Based on an old drawing

The later boats were made so they did not need water as deep as had been needed by the first boats. This change made possible the use of many shallow rivers which at first could have no steamboats.

Steamboats brought freight charges down to less than one-fourth of what they had been. The cost of travel also was reduced greatly. In their time of greatest use, steamboats carried many millions of dollars worth of freight each year, and several million passengers.

Some fine boats were built to carry only passengers. They were furnished as elegantly as the best hotels of the time in the larger eastern cities. Of course, their charges for cabins and food were rather high. But other boats offered cabin passage and food at moderate rates. People of every sort traveled by steamboat—Indian traders, soldiers, settlers, miners, merchants, farmers, and planters.

The life of the West was bound up with steamboat navigation. Steamboats had changed the habits of the people. They had also given people a great interest in the habits of the rivers. Everyone who lived along the rivers was concerned with the rising and falling of the waters.

Busy steamboat landings. The steamboat landing at any of the larger river cities was a busy place in the navigation season. The riverside usually was crowded with boats, loading and unloading. Boxes and bales, bags and barrels, casks and crates were carried on the shoulders of men, pushed in wheelbarrows, or rolled along to and from the boats.

Corn, wheat, and other grains were shipped in sacks or barrels. The river cities had no grain elevators. And warehouses could not be built at the edge of the river. At some cities they were two or three blocks away. This meant much extra work. Some freight had to be shifted by hand from boat to wagons called drays, from dray to warehouse, and later from warehouse to dray and from dray to boat.

Many of these things are shown in this picture of the river front at Louisville. Big steamboats are being loaded and unloaded. Two small flatboats near the bottom of the picture seem out of place. They bring to mind earlier days in the life of the river. The warehouses stand well back from the water. The sloping ground between the warehouses and the river is paved with stones,

so that loaded wagons can be hauled over it in all kinds of weather.

At New Orleans. There were more arrivals of steamboats at New Orleans than anywhere else—more than 3200 in one year. From the North they brought corn, wheat, oats, hay, potatoes, butter, cheese, corn meal, flour, hams, bacon, lard, pork, beef, whiskey, and lead. The farms and towns of the upper country had found in the cotton-growing lands of the South a market for much of their surplus. For them, New Orleans was the doorway to the South and to the sea.

From plantations along the lower rivers New Orleans got cotton, sugar, and molasses. By sea it received groceries and manufactured goods. Such things it sent up the Mississippi to many places. It lived chiefly on its steamboat trade.

St. Louis, meeting place of river routes. Second only to New Orleans as a steamboat center at the height of river trade was St. Louis (Fig. 7). For more than half a century it had been a small place, depending mostly on the fur trade. Active growth came with the settlement of the upper Mississippi and lower Missouri valleys and with the use of their rivers by steamboats.

River routes from all sides led toward St. Louis. Various steamboat routes ended there, too. This was partly because of a change at St. Louis in the depth of the Mississippi. Many things that came and went in large amounts by steamboat helped to make St. Louis a thriving place. The busy city received, shipped, transferred, and stored these cargoes.

Cincinnati. During the years of busy steamboat trade Cincinnati was the largest city in the Ohio Valley. It shipped more and more farm products. It built more and larger mills and factories to use more of the raw products of the great farm area that it served. Most of its river trade, by far, was with New Orleans. It had many close ties with the South. Southern planters brought their fam-

ilies to Cincinnati to spend the hot weeks of summer.

Pittsburgh. Pittsburgh showed, more and more, that it was to be a great manufacturing city. It built engines for steamboats, machinery for mills, wagons, and implements for farmers and planters. Pittsburgh shipped all these things and much coal by river. Coal from mines near Pittsburgh replaced wood as fuel on many steamboats. Both Pittsburgh and Cincinnati built many steamboats.

Other places and little streams. Dozens of smaller cities and hundreds of towns had a share in the trade of the rivers. And on many little streams, beyond the reach of any steamboat, farmers still made and used flatboats. Here and there these boats would lie, waiting for high water. When it came, they floated off and were steered down to larger streams. There their cargoes might be shifted to steamboats or they might go all the way to New Orleans, floating with the current.

Dangers of steamboating. Running a river steamboat meant facing many risks. A pilot often had to locate the channel by the appearance of the water. There were things about the flow by which he judged where the water was shallow or deep, where sand bars were forming or being cut away. Good pilots got two or three times as much pay as the captains of steamboats.

There were thousands of sand bars in the rivers. Many of them changed constantly in form or position. There also were thousands of snags—tree trunks firmly fixed in the river bottoms. Some stuck above the water. Others were covered. The many bends in some of the rivers and the tall trees along their banks shut off the view ahead. Strong cross currents sometimes swept steamboats against each other. Some channels shifted between one trip of a steamboat and the next trip. There were many such obstacles and risks. Many steamboats were lost because of them.

Boats were destroyed, too, by fires, by bursting boilers, and by the breaking-up of



From an old drawing

Figure 43. A river at high flood

river ice. One spring seventeen steamboats that had been frozen in at St. Louis were crushed by masses of ice driven along by flood waters. They all sank quickly.

Later days and ways. The rivers had some defects that could never be cured. The depth of water in them could not be kept the same. It varied much, from one time to another and from one place to another. Many channels were very crooked. The general directions in which some rivers flowed forced trade to take roundabout routes. The northern rivers were frozen over for several months each winter.

The coming of railroads made all the troubles of river trade greater than before. The locomotive triumphed over the steamboat. Only a tiny part of the once great fleet of steamboats survived. The boats that once had seemed so swift seemed painfully slow. The rivers lost most of the passenger trade. They lost most of the traffic in valuable freight. They lost, too, most of the transportation of things that might spoil if they were very long on the way. The rivers kept a larger part of the carrying trade in heavy and bulky things, such as grain, coal, and lumber.

Steamboat days on the Mississippi and its branches had been days of great progress. Agriculture, industry, and river trade grew together. They supported one another. The western population that depended on the rivers as main highways increased rapidly. But just as keel boats had given way to steamboats, so the river steamboats gave way largely to railroads. The time in the life of the country when river steamboats played so great a part had ended. "Steamboat days" were over.

Things to Remember about our Country

1. *The first steamboat on any western river was built in 1811, and by 1820 many steamers were in use. On some rivers "steamboat days" lasted for about 40 years, but on others they lasted longer. Where was the first steamboat built? Where was this boat used after its first long trip?*
2. *Steamboats were a great improvement over the boats used earlier in river trade. They helped river trade to grow rapidly. In what ways were they better than the earlier boats? How did they help river trade to grow? Tell about later improvements in them that made them even more useful.*
3. *Pittsburgh, Cincinnati, Louisville, and many smaller places on the rivers grew rapidly, in steamboat days, of course, but New Orleans became the busiest river city and St. Louis the next busiest. Give reasons why these two became so important.*
4. *Even before railroads came, river trade had troubles which, together with the railroads, helped to bring steamboat days to an end. Tell what those troubles were. Explain how each trouble helped to end steamboat days.*

Exploring and Finding for Ourselves

1. Figure 43 helps us see why warehouses in the river cities were not built at the edge of a landing place. Tell why.
2. As settlers moved westward along the Ohio River, which did they reach first, northern Illinois or southern Illinois (Fig. 7)?



Figure 44. An early prairie settler, homeward bound at sunset

Prairie Settlements

A new kind of country. The man in the picture is riding through tall grass toward his home. He settled in Illinois a little more than 100 years ago. His farm was on the edge of a large area that was covered with grass. Everywhere this grass when fully grown would have reached above the legs of the man's horse, as it does in the picture. Such grasslands in Illinois were called prairies. The grass itself was called prairie grass.

Prairies covered about two-thirds of Illinois, but they were not all in one huge block. Prairie land and woodland were mixed, as in the picture. Toward the southern end of the state there were only small prairies here and there, surrounded by timber. Farther north, there were large prairies. But even in the largest prairie areas, there were strips of timber in the valleys and ravines and groves of trees on the upland. There was said to be only one place in all Illinois where on a clear day a man on horseback could see no timber in any direction.

The prairies were a new kind of country to the people who first came to Illinois. To settle in them meant facing strange problems.

For a time settlers could avoid the prairies and their problems. They could take up farms that were all woodland. Almost all of them did so.

Later settlers took land along the edges of the timber. Their farms contained both woodland and prairie. They had their own timber for buildings, fences, and fuel. They cultivated the land they cleared, and grazed their cattle on the part that was in grass.

Finally, new settlers could get only prairie land. But they tried to be within a few miles of timber, in the hope of buying a few acres of woodland from earlier settlers. In this way they could have wood lots from which to haul wood for fuel and fences.

In general, then, settlement clung to the woodlands as long as possible and as closely as possible. The winning of the open prairies waited.

Objections to the prairies. The southern part of Illinois was settled before the northern part. Most of the pioneers in the southern part came from the Piedmont Plateau or from Kentucky or Tennessee. They avoided the prairies and settled in the timber. This was very natural, for they knew all about forest life and nothing about how the prairies might be used.

They saw many objections to the prairies. They believed that lack of trees meant poor soils. Good soils, everyone thought, would have trees. Prairie settlers, unless they were close to timber, would have no wood for houses or fences or fuel. The prairies lacked stone, too, which might be used for building. They did not have a good supply of running water for stock and for mills. On a large, open prairie there was no protection from the bitter winds of winter. Fierce fires might sweep through the tall, dry grass in late summer or autumn.

The prairie grass, it was found, had matted roots and made a tough sod. The settlers did not have plows suited to "breaking" the sod. They did not know when to plow or how deep to plow. For a time men seemed helpless in the face of all these problems.

Moving out. When the woodlands were settled, newcomers were crowded out upon the prairies. People from New England and New York, coming to northern Illinois in large numbers, filled in the margins of the timber and then had to move into the open land.

These settlers were advised to build their homes to the south or southwest of timber, if possible, and close to it. This was done by the settler in Figure 44. In summer, winds came most often from the south or southwest. In winter, the coldest winds were from the north. The smallest prairies, those that had the best water supply and were bordered by the heaviest timber, were settled first.

Some small prairies were completely surrounded by timber. A ring of farms was

likely to form around such a prairie, each farm having, perhaps, some woodland and some prairie. Then a second ring of farms formed inside the first ring, and later a third ring within the second one. This kept up until the whole prairie was settled.

Learning some good things. As settlement moved away from the timber, people learned good things about the prairies. They got big crops and so discovered the richness of the prairie soils. They were surprised to find that these soils were more fertile than the forest soils. The prairie grass gave fine pasturage. It made good hay, free for the cutting, for use in winter. Plenty of water was had by digging shallow wells.

People learned that trees would grow from seed on the prairies. So in time most prairie farmers had shade trees near their houses. Many also had rows of close-set trees, called windbreaks, that gave shelter from the winds. Seams of coal were found on the sides of some valleys. Then near-by farmers had cheap fuel. In many ways prairie life was not as hard as had been expected.

Fires. Not all of the early objections to settlement on the prairies were without reason. For instance, Figure 45 shows men fighting one of the dreaded prairie fires. Some of the men are trying to beat out the flames. The man with the plow is making wider a strip of bare ground, where the fire may be stopped.

Fences. For years the problem of fences was difficult. And if prairie farmers raised stock they had to have fences to protect their crops. Rails were used, of course, on farms that were near timber. Usually the rails were laid in a straight line, not zigzag, in order to use no more than necessary. Most farmers could not have rail fences. Some tried sod fences. Others made ditches in place of fences. Both were unsatisfactory. Many farmers set out high hedges made with Osage orange trees. Finally, wire fences came into general use and solved the problem.



Figure 45. Fighting a prairie fire

Based on several early sketches

Lumber. Another great need of the prairie settlers who did not have wood lots was lumber for houses and barns. Most settlers near timber built their first houses with logs. Some made cabins of saplings, with roofs of bark and clay chimneys.

The growing demand for lumber on the prairies led to logging in the pine forests of Michigan and later in those of Wisconsin. Logs cut in winter were floated down the rivers of Michigan which flow toward the west. At the mouths of these rivers mills were built where the logs were sawed into lumber and where shingles and fence posts were made. Many men who owned or worked in the logging camps or the mills were lumbermen who had come from New England or New York.

The products of the lumber mills were taken by sailing vessels across Lake Michigan to Chicago, the gateway to the prairies. As years passed, settlement in Illinois and logging and lumbering in Michigan and Wisconsin helped each other more and more.

Plows. Many settlers came to Illinois with plows that had wooden moldboards. It was hardly possible to turn prairie sod with them. Then cast-iron plows came into use. They were much better, but a farmer while plow-

ing had to stop every few yards to scrape off the dirt that stuck to the plow.

Finally a blacksmith from New England made a steel plow for a discouraged farmer. Steel plows, it was found, would scour themselves in the prairie soil. They came to be a great help in prairie farming.

Commercial farming. Even after settlers had learned well how to farm on the prairies, there was one great difficulty. They could not get their products to a large market unless they lived within hauling distance of Chicago or a shipping point on a navigable river. And the dirt roads made it hard or impossible to haul loads across the prairies in wet weather. The trouble which the farmer in Figure 46 is having was common. Men who had hauled their grain 150 miles and were close enough to Chicago to see smoke rising from its chimneys were stopped sometimes by bad roads. They had to haul the grain back home or dump it at the roadside. Some of them did dump it in order to go back with light wagons.

It was an old story. Commercial farming and prosperity depended on getting better transportation. The rivers and a canal that was dug from Chicago to the Illinois River, Figure 7, helped many farmers, but not those



Figure 46. Stuck in the mud

Based on an old drawing

who had made farms far away in the big prairies. There much land remained unsettled, for want of transportation. Neither river steamboats nor boats on the Great Lakes were within reach.

Then at last many railroads were built from Chicago, more than 2700 miles of them in 10 years. They ran from Chicago through all the big prairies, like the ribs of an open fan. They brought lumber, machinery, and merchandise to the prairies. They took back corn and wheat in bulk to elevators at Chicago, for shipment east by lake. Shipping stations were built along the railroads. Quickly the vacant spaces in the prairies filled up. Settlement kept pace with railroad building.

At the same time better reapers, threshing machines, and other improved machinery came into widespread use. High prices for grain helped the farmers greatly, too. Corn and wheat were the leading crops. The production of corn and wheat in Illinois more

than doubled in the 10 years when railroads, new farm machinery, and high prices all came to help complete the conquest of the prairies.

Things to Remember about our Country

1. *Early pioneers in Illinois settled in wooded land and were afraid of the prairies. Tell five of their objections to prairies.*
2. *When later settlers were crowded out into some of the prairies, they learned several good things about prairie land. What were those things? What parts of a prairie did they settle first? Last? Why?*
3. *Much land in the larger prairies was not settled, however, till railroads were built into them. How did the railroads help farming and the settlement of those prairies?*

Exploring and Finding for Ourselves

What two states border most of the Great Lake nearest the Illinois prairies (Fig. 7)? What kind of work in those two states was helped by the settling of those prairies?

The Great Lakes and Their Cities

A story of great changes. The story of the Great Lakes is a story of amazing changes. A lonely waste of waters has become the busiest inland waterway in the world.

The wilderness around the Lakes has been largely cleared away. Farms and factories, railroads and cities, have taken its place. The shores of the harbors have been settled. Some of these settlements are now among the greater cities of the country.

No city of the Lakes has gone through greater changes than Chicago. Little more than 100 years ago it was just a small village—a frontier trading post. But many settlers from the East were expected to come soon by lake. The village wanted to look its best. So the people were told that they must no longer let pigs run at large in the streets and that they must not throw trash into the river. In less than 60 years from that time Chicago became the second largest city in the country and was getting ready for a World's Fair.

Canoes and the fur trade. The first traders on the Great Lakes were fur traders from eastern Canada. They used birch bark canoes and kept close to the shores they followed. They needed to land quickly whenever there was a storm, for their canoes might be overturned or crushed by big waves. The canoes were so frail and so easily injured that the traders had to be careful in landing on a gravelly or stony shore, even when the weather was calm.

Year after year these traders visited Indian villages in the Mississippi Valley, far beyond the Lakes. In taking goods to the villages and bringing furs back, they used the easiest and safest routes they could find. Their canoes could be used on small streams as well as on the big Lakes. Some of their routes between the Great Lakes and the Mississippi

and Ohio rivers were followed later by roads, canals, and railroads. For about 150 years, the fur trade was the only regular trade on the Great Lakes.

Sailing vessels and steamers. Canoes gave place at last to much larger boats on the Lakes. First, sailing vessels appeared, and then steamers. Both carried passengers and many kinds of freight.

The first steamer, called the *Walk-in-the-Water*, was built near Buffalo in 1818. It was a strange looking steamer, as the picture in Figure 47 shows. The engine was taken up the Hudson River from New York to Albany in a small sailing vessel. It was hauled from Albany to Buffalo by wagon. The *Walk-in-the-Water* made many trips between Buffalo and Detroit. The trip one way often took two to three days.

This first steamer was small and slow, but travelers liked it much better than the sailing vessels. After the opening of the Erie Canal the need for lake steamers increased. More and more of them were built and they were improved greatly. Finally, 157 steamers were launched in a single year.

Each year for many years steamers and sailing vessels took thousands of people west from Buffalo, with their tools, household goods, provisions, and animals. Most of them landed at Detroit, Chicago, or Milwaukee. In one year steamers alone carried nearly 98,000 people from Buffalo. Almost all of them were going out to make new homes. Lake transportation was playing a great part in the settlement of the West.

Some years after the beginning of this west-bound passenger trade and freight trade, a return trade started in farm products. The west-bound trade continued, of course, and became larger. More and more manufactured



Figure 47. The Walk-in-the-Water

From an old lithograph

goods were needed by western people. The lumber trade, already described in the story about the prairies, also meant cargoes for many vessels.

The ore fleet. The opening of a canal, called the Soo Canal, made it possible for large boats to pass between Lake Huron and Lake Superior. Iron ore from mines near Lake Superior could be taken in freighters to cities on the southern shores of the lower

lakes to be used there or shipped inland. For many years now the great ore fleet has had first place in the commerce of the Great Lakes.

The past and the future. Lake navigation began with the bark canoe and its little load of furs. It has come to the steel freighter, with its load of 12,000 or more tons of ore. Very great changes, then, have taken place.

Other great changes may take place in the

[60]

Figure 48. Buffalo in 1825

From an old lithograph



future. For instance, Canada and the United States plan to make it possible for ocean ships to enter all the Great Lakes. If the plan is carried out, the Lakes will be inland seas and the cities on them will be inland seaports.

Cities of the Lakes. These cities owed their start to lake navigation. The growing trade of the Lakes flowed back and forth between them. For a time they were simply connecting links between the East, which was turning more and more to manufacturing, and the West, which then depended very largely on farming. Buffalo, Cleveland, Detroit, Milwaukee, and Chicago were the leaders among them. Today these places are the largest five cities of the Lakes. They are all shown on the map in Figure 7.

Buffalo. The Erie Canal and Lake navigation first made Buffalo important. Canal boats from the east and lake boats from the west met there. Figure 48 shows how Buffalo looked in 1825, the very year the canal was finished. The village was on a low bluff on the north side of Buffalo Creek, which served as a harbor. The new warehouses at the right of the picture were near the point where the canal and the creek joined. Already it was clear that Buffalo would soon be a busy place.

Year after year canal boats and lake boats came to Buffalo in larger and larger numbers, bringing more and more trade. As the trade of Buffalo grew, the population of the city grew. At one time Buffalo was twice as large as any other place on the Great Lakes. It was called "The Queen City of the Lakes." If some other place had been chosen for the end of the Erie Canal, the story of Buffalo would have been very different.

West-bound settlers bought supplies in the stores of Buffalo before starting up the Lakes. The inns were crowded with people waiting to set sail. The warehouses along the canal bank and the harbor were filled. They held merchandise, furniture, salt, and farm tools waiting to be shipped west. Soon

they also held flour, wheat, corn, wool, and other things that were on the way from western farms to eastern cities. Many people earned a living by loading and unloading boats, by shifting and storing cargoes. The trade of the city made work of many kinds for the people to do.

Of course, many things were done to help commerce, and they too gave work to many people. The harbor, which at first was only the mouth of Buffalo Creek, was made larger and better. A lighthouse was built. More inns and stores and warehouses also were built whenever they were needed. In time, grain elevators were put up. Such things showed clearly that Buffalo lived chiefly by its trade.

Most people in Buffalo did not like the coming of railroads. Before that, it had seemed that nothing could hurt the trade of the city. This was because the means of travel and transportation had to change at Buffalo. But if railroads from the East were built through Buffalo and on to the West, a change there in the means of transportation would not be necessary. Merchants, inn keepers, warehousemen, and boat owners all feared they would lose business. But Buffalo solved its problem by turning more and more from trade to manufacturing. It ceased to be simply a trading city.

Buffalo has owed much to Niagara Falls. These falls are in the Niagara River between Lake Erie and Lake Ontario. They are the greatest waterfalls in North America. If the falls had not been there, and if boats could have passed between Lake Erie and Lake Ontario, Buffalo might not have become an important trading city. The great meeting place for lake boats and canal boats might then have been on the southern shore of Lake Ontario at a point much nearer than Buffalo to the Hudson River. That would have made canal transportation much shorter between the Hudson and the Lakes.

Niagara Falls still help Buffalo, for the

city uses great quantities of electric power made at the falls. So Niagara Falls first helped Buffalo as a trading city and much later helped it as a manufacturing city.

Cleveland. Cleveland was founded at the mouth of a narrow, winding river that flows into Lake Erie from the south. The river was shallow. Lake boats had trouble getting into the river, because of moving sands and shifting channels. So the river harbor was improved. Later, an outer harbor on the lake front was made by building walls to break the force of the waves. These walls are called breakwaters.

Several places on the southern shore of Lake Erie had better natural harbors than Cleveland. But Cleveland had one great natural advantage over the other places. It was at the end of the best lowland route between Lake Erie and the upper Ohio River. This overland route was broad and fairly level. It was certain, then, that Cleveland would become a busy meeting place for lake traffic and land traffic.

Through this lowland route moved settlers and their supplies, along with goods of many kinds. Through it moved growing quantities of farm products. By way of it a canal reached Cleveland. The canal was built by the state of Ohio to connect the Ohio River with Lake Erie. It helped much to increase the trade of Cleveland.

Of course, many things have changed in Cleveland. Railroad tracks now occupy the bed of the old canal. Huge freighters, bringing in iron ore and taking out coal, line the docks in place of the old-time steamers. The city now depends on manufacturing more than on trade. But the importance of Cleveland, both in manufacturing and trade, is due first of all to one fact that remains unchanged. Now as in earlier years Cleveland is the place in Ohio where lake traffic and land traffic can best meet.

Detroit. Of the five great cities on the Lakes, Detroit is by far the oldest. It was

founded as a military post and fur-trading station. The spot chosen for the fort was the top of a low bluff close to the Detroit River. It was the highest place anywhere near the west bank of the river. And it was opposite a broad, deep channel in the river. This was fortunate at a later time when the prosperity of Detroit depended on deep-water navigation.

A little village grew up around the fort. Around the village, in turn, was a palisade. The land inside of the palisade was divided into lots and garden plots. The houses were made of logs. Outside of the palisade were the small farms of the villagers. A man did not have to grow all the food used by his family, for there was good hunting in the near-by forest and good fishing in the river. A small mill, using wind power, was built in the village to grind corn and wheat.

After fifty years the village at the fort had fewer than 100 houses, but the homes of farmers lined the river bank for some eight miles and formed part of the settlement. A single road ran along the river, joining the farms with the central village. A few Indian trails led back into the wilderness. The river was the main highway, of course, and most of the farmers had canoes or dugouts. The farms were narrow, but long. Some were only a few hundred feet wide on the river but ran back from it for two miles.

Water was brought from the river to the houses in buckets that hung from a wooden yoke. Clothes were washed in the river. Near each house was an outdoor oven made of sticks plastered with clay, in which the family baking was done. Behind the rough barns stretched the fields of corn, wheat, barley, potatoes, and beans.

After another fifty years the people in Detroit still numbered only about 600. Then, as earlier, the village was only a frontier outpost. The postmaster grew seeds for sale. Much of the trade was carried on



Figure 49. Detroit, about 1840

From a colored aquatint

without money by giving one thing for another. Many Indians still lived near-by and brought in furs and skins to trade. The village was still surrounded by a palisaded fence.

Finally, the coming of the first steamer and the opening of the Erie Canal brought better times. For years steamers from Buffalo did not go beyond Detroit. It was a landing place for thousands of settlers. The Indian tribes moved away from the area. The old fort was torn down. The docks were made longer. Roads were built toward the west. Out along these roads went farmers, seeking fertile land. Back along them these farmers later sent their produce to Detroit. There new businesses were started. Manufacturing developed. The growth of the town kept pace with that of the back country. More and more, Detroit took on the

appearance of a city. And it was a busy city, as the picture suggests. The river, sometimes crowded with steamers, sailing vessels, and smaller boats, was the "main street" of the Lakes.

Detroit, like Cleveland, depends today more on manufacturing than on commerce. It is not so well placed as Cleveland to share in through traffic on the Lakes. It now depends more on land transportation than on water transportation.

Milwaukee. The youngest of the larger cities of the Lakes is Milwaukee, at the mouth of the river of the same name. No trading post was built there. Not until several years after the first steamer reached Lake Michigan did any settlers build their homes there. But once started, Milwaukee grew rapidly. When only fifteen years old it was almost as large as Detroit, then ten

times as old. It already had won its place as the leading port of Wisconsin.

Milwaukee grew so rapidly because it was the main doorway to southern Wisconsin. Three things led most people who came by lake to southern Wisconsin to enter it through the Milwaukee doorway.

First, the harbor at Milwaukee was soon improved. After that, it was much easier and safer for steamers and sailing vessels to dock at Milwaukee than it was at other Wisconsin ports. Second, a government land office was opened at Milwaukee. At this office settlers who landed there could arrange without delay to take up land in the back country. Third, the main early roads that were built across southern Wisconsin started from Lake Michigan at Milwaukee.

The harbor improvements, the land office, and the roads did much to make Milwaukee, while it still was very young, a busy, fast-growing city. After a time, too, the first railroad in Wisconsin was built inland from Milwaukee. It also helped.

Lake trade has continued through all the later years to help the progress of Milwaukee in commerce and industry. In these later years more coal than anything else has come by boat and more grain than anything else has left by boat.

Chicago. The location of Chicago on the Lakes gave it great chances for growth. It was near the southern end of Lake Michigan, which reaches hundreds of miles into the United States. The other Lakes are between this country and Canada. Chicago was nearer than the other towns on the Lakes to the chief areas that produced corn, wheat, hogs, and cattle. It was between prairies and forests, and between deposits of iron ore and of coal.

Land routes between the Northeast and the Northwest had to go around the end of Lake Michigan, through or near Chicago. Routes could be opened to it easily from the southeast and southwest, across nearly

level plains. At Chicago these routes met the other land routes and connected with the highways of the Lakes. It is easy to understand, then, why Chicago became the hub of the American railroad system. Of course, these things did not all begin to help Chicago at one time. But its growth at all times has been due largely to its good location at the corner of the Great Lakes.

Chicago was not laid out at the very end of Lake Michigan, but some miles to the north at the mouth of the Chicago River. The river could be used as a harbor. From the river a lowland route led southwest to the Illinois River. This route had long been used by fur traders. It is used today by busy highways.

The land around the mouth of the Chicago River was almost flat and only a few feet above the Lake. Water from the Lake flooded the edge of the town whenever strong winds blew from the east. Drainage was bad, and so cellars were impossible.

For a time lake vessels could not enter the river, because of sand bars. They had to anchor off shore in the open lake. Then a channel was dredged and a breakwater was built to keep the sand from again choking the mouth of the river. Lake vessels could get into the river after that, but it was hard for them to turn in the narrow channel and often they had to wait for a chance to unload and load. Other difficult problems grew out of the low plain and the little river. Most of the difficulties were finally overcome.

Only 25 years after Chicago was laid out it already had much to its credit. It looked then as shown in the picture. Railroads were beginning to share in the trade of the city, as the train in the lower left-hand corner of the picture shows. Most trade still was carried on by boat, however, and the narrow river was often crowded with shipping. That very year there were more than 5000 arrivals of steamers and sailing vessels at the docks of Chicago. It had become the chief market



Figure 50. Chicago, about 1855

From a contemporary drawing

place of the prairies. It was connected by canal with the Illinois River. It had taken the place of Albany as the greatest lumber market in the country. Soon it would take the place of Cincinnati as the greatest slaughtering and meat-packing center. It shipped more grain than any other port on the Great Lakes. The manufacture of farm machinery was well under way in the city and many other industries were being started. Railroads were being built to Chicago and from it in great haste.

By 1860 Chicago was the largest city on the Great Lakes. And the Lakes became the world's greatest inland waterway.

Things to Remember about our Country

1. *Some of the great changes in the West after 1789 took place on the Great Lakes and their shores. What have those lakes now become?*
2. *For about 150 years before those changes began, the fur trade had been the only regular trade on the Lakes. How did the early fur*

traders travel? What did they find in the West which people there today still use?

3. *The earlier changes came with the coming of sailing vessels and steamers to the Lakes during the westward movement of settlers.*

What happened at Buffalo in 1818 and in the L-shaped lowland in 1825 which helped to make trade grow? Why was there more west-bound than east-bound trade for some years?

4. *Later changes took place after the opening of the Soo Canal (1855) and the coming of huge freighters. And perhaps great changes are still to come. Where is that canal? What do most of the big freighters now carry? What ships may some day come to the Lakes?*

5. *The cities on the Lakes which are now the largest five grew and changed as lake trade grew and changed. Tell the story of each one of them, showing how its location helped to explain its work and its growth.*

Exploring and Finding for Ourselves

1. Which has the longer Great-Lakes shoreline, Canada or our country (Fig. 7)?
2. By the time the Soo Canal was opened, what territory was in our country (p. 10)?

On the Western Plains

Plains that were passed by. Just east of the Rocky Mountains there are high plains that stretch north and south across the country. They are shown on the map in Figure 7. These western plains do not get enough rain for forests to grow. They are grasslands. In some parts of them short grass covered the ground in early days. In other parts, the grass grew in scattered bunches. Only here and there along the streams were there trees.

Many Americans crossed the western plains without trying to make settlements in them. Among the first were trappers and fur traders. Some of these men took their traps and their goods for the Indian trade up the Missouri River, Figure 7, to the mountains. At first, they used keel boats on the river, for steamboats had not yet appeared, even on the Ohio River. Later, other traders crossed the plains each year with wagons on their way to Spanish settlements in the southern Rocky Mountains. They took cotton goods, medicines, and other things to sell. Later still, about 100 years ago, thousands of people crossed the plains on their way to lands along the Pacific Ocean.

In these ways much was learned, of course, about the western plains. But most people thought they were not worth settling. They were passed by. Some people thought these plains might well be left always to the buffaloes and Indians.

Buffaloes and Indians. Scenes like that in the picture on the opposite page were common when Americans first reached the western plains. Thousands upon thousands of buffaloes in many big herds roamed from place to place. And the Indians of the plains moved often in search of buffaloes. They lived by hunting. From the buffaloes they

got meat, and hides for clothes, blankets, and shelter. They made weapons and needles from the bones, thread from the sinews, glue from the hoofs. They used sun-dried buffalo manure, called buffalo chips, for fuel.

Since the Indians needed to make many quick moves, they got along with small light tents, called tepees, that could be taken down and put up easily. They had few possessions that they did not really need. It was best to travel without heavy loads.

White hunters. In later years, great numbers of buffaloes were killed by white hunters. Many were shot to get meat for the men who built the first railroads across the plains. Very many more were wanted for their hides, not for meat. There were fortunes in "hide hunting." The hides were used in the East for robes, belting for machinery, and other things. Many people used buffalo robes as lap robes when driving in cold winter weather.

At last, few buffaloes were left alive. So many were killed in some parts of the plains that later it paid to collect their bones and ship them away for use as fertilizer.

As the buffaloes were killed off, the Indian tribes of the plains lost their chief means of living by hunting. They became dependent on the whites and were settled in areas, called reservations, set apart for them. So the plains were cleared for the cattlemen and their herds of cattle.

The days of the cattlemen. Cattle were taken to Mexico from Spain long before Jamestown, Virginia, was founded. And there were Spanish cattle ranches on the southwestern border of Texas when the first pioneers crossed the Appalachians. The cattle industry began, then, at the southern end of the western plains long before the plains



Figure 51. A land of buffaloes and Indians

Based on several early sketches

farther north were opened up to American cattlemen.

Central and western Texas became in time a "land of cattle." When railroads were being built westward across the central part of the plains, great numbers of cattle were driven from Texas to shipping points near the ends of the railroads. These shipping points were called cow towns. A place for a cow town was chosen which had a good supply of water and grass, and which was

well in front of the farmers who were settling along the railroad. When farms got too near, a new cow town would be started, farther away. In Kansas alone there are seven or eight cities or towns that were started as cow towns.

In the best year of the Texas cattle drives, four thousand cowboys drove one million cattle out of the state. From the cow towns cattle were shipped by railroad to St. Louis, Chicago, and other meat-packing cities. The



Figure 52. Texas cattle, bound for Montana

Based on a photograph

meat products were shipped on to the eastern states and to Europe

The long cattle drives ended when railroad building made them unnecessary. The railroads took cattle all the way to the meat-packing cities in much less time and usually in better condition.

Raising cattle toward the north. When the cattle drives from Texas began, it was thought that cattle could not be kept throughout the year on the grasslands of the middle and northern plains. But the grass was cured by sun and wind in summer and autumn and it was found that cattle wintered well with no other feed. So the cattle business began to spread northward from Texas. In a few years it reached the Canadian boundary.

Many young cattle were driven from Texas north as far as Montana, to be kept there until old enough to go to market. Figure 52 shows part of a herd of 6000 cattle on a ranch in Texas, ready for the "finishing ranges" of Montana.

Trouble on the plains. The grasslands north of Texas that were used by the cattlemen belonged at first to the government.

They were public lands—part of what is called the "public domain." As the farming frontier moved westward into the grazing area, there was trouble between the cattlemen and the farmers. If cattle roamed at will, for instance, crops were likely to be injured or destroyed.

In time, laws were passed to protect the farmers. Cattlemen were to be held responsible for damage done by their stock. Many stockmen then became owners of land and fenced it off in ranches. Many who did that substituted sheep for cattle. Gradually over wide areas ranch methods took the place of open-range methods. The days of the old-time cattlemen came to an end.

A great failure for farming. Agricultural settlement in the western part of the plains was tried first on a large scale in western Kansas and Nebraska and in eastern Colorado. That was about sixty years ago. Several years in which more rain than usual fell helped to start settlement. The advertising of railroads, town-builders, and land-dealers helped to keep it up for a time. Farmers came by thousands, many thousands. They



Figure 53. The "black blizzard"

From a photograph

plowed the grassland, and began to grow wheat. Towns were laid out along the new railroads. All of the towns expected to become cities.

Then came several very dry years. Crops withered and died. The farmers were starved out. The towns were deserted. Millions of acres returned slowly to grass. American frontiersmen had suffered their first great defeat.

Another failure. About thirty years later similar things began to happen in eastern Montana. There were three "wet years" there in a row. Tens of thousands of settlers flocked in. They planned to grow wheat, which was selling at higher and higher prices. Land values doubled, and doubled again.

Then came three years without enough rain for wheat to grow. Land values dropped until they were lower than before the boom started. Ruined farmers left the area in large numbers. Congress voted money to buy seed for the distressed farmers who stayed.

New ways and new hopes. In spite of all such setbacks, wheat farming spread widely over the old grazing lands of the western plains. The tractor, the combine, and other new machines were thought to have made certain the success of big-scale farming there. The machines had greatly lowered the cost

of growing wheat. There were, of course, risks to be faced. Too much rain in spring meant too rank a growth of the stalks of wheat that had been sown in the autumn. Later, too much rain meant black rust of wheat. At harvest time rain might break the uncut grain to the ground. But wheat growers would succeed, it was believed, in spite of losses due to such things or to ordinary dry years.

The greatest setback. High hopes gave way to deep despair in 1933. For several years, beginning then, very little rain fell on the plains. Wheat could not grow. There was great distress from end to end of the plains. Many thousands of farmers left their land and made their way to the states on the Pacific Ocean, hoping to make a living there. The government tried in every way to help the people in need.

The land itself had to be saved. Great areas were injured when strong winds blew the fine top soil away from the dry, bare wheat fields. Figure 53 shows a dust storm in eastern Colorado. It was called "the black blizzard." Some of the fine dust was carried by the winds all the way to the Atlantic coast. It must have been clear to every one at the time that the western plains were still a land of great agricultural risks.

Uncertain rainfall. As these stories suggest, the rainfall of the western plains is very uncertain. A place may get plenty of rain for crops in one year and far too little the next year. Large areas may get as much as twice their normal amount of rain, or only half of it, in a given season, in a year, or in a short period of years. And it has been impossible to tell ahead of time how much rain was coming or when it would come. So farmers could not plan for it.

Strong winds blow across the plains. In summer they are often hot, drying winds, and they have made farming still harder.

In some of the valleys of the plains, farmers have raised crops by irrigation. If an irrigation farmer has enough water for his crops in all years, he does not need to worry about the uncertain rains. But many irrigation farmers have not had enough water in some dry years. The flow of the streams varies with the rainfall. During a long severe drought the supply of water may fail in even a large storage reservoir. And at best only a very small fraction of the land of the plains can ever be irrigated, because of lack of water.

An unruly river. The main western branch of the Mississippi is the Missouri (Fig. 7). It is longer than the Mississippi and much more than twice as long as the Ohio, the main eastern tributary. Yet it has been far less useful than the Ohio as a highway.

From western North Dakota to Kansas City the Missouri flows in general to the south-southeast, as the map in Figure 7 shows. This course was directly across the east-to-west lines along which population moved. It was also across the main lines of later traffic. Shifting channels, thousands of sand bars, and countless snag helped to make navigation of the river difficult. Then, too, the Missouri lacked tributaries that could serve as branch lines of traffic.

Forty years passed after a small steamboat entered the Missouri River before one reached the head of navigation in Montana.

Few boats ever used the river above the great bend at Kansas City. Great sums have been spent to improve the river for navigation, but the results have not been great.

The other rivers that cross the plains on their way from the Rocky Mountains to the Mississippi were even less useful in travel and transportation. The highways of the plains have been trails, roads, and railroads.

The greatest handicap of the western plains has been, then, lack of water. Lack of water in stream channels for navigation. Lack of water in stream channels for irrigation. Most of all, frequent lack of water in the soil for the use of growing crops.

Things to Remember about our Country

1. *Until within the last 100 years, most pioneers who reached the high plains east of the Rocky Mountains went on across them instead of settling there. What made those plains seem not worth settling?*

2. *The days of buffaloes on those plains were followed by the days of the cattlemen. From where and to where did the cattle industry spread? What were cow towns?*

How did railroads help to end buffalo days and, later, the long cattle drives?

3. *After wheat farmers settled in the plains, the ways of cattlemen changed. Tell how and why.*

4. *High-plains farmers have found that they face many risks there. Tell three stories of their hopes and failures. What things about these plains cause the trouble?*

5. *The Missouri River crosses these plains but it has been far less useful than the Ohio as a highway. Why?*

Exploring and Finding for Ourselves

1. Parts of ten states are in the high plains. What are those states (Fig. 7)?

2. Find Kansas City at the great bend of the Missouri (Fig. 7). If one plane flies *due east* from there to the Atlantic coast and another flies *due west* till it comes to California, which one flies farther?



Figure 54. Early mission in California

Adapted from a photograph

California and Gold

First settlements. California looks out upon the vast Pacific. That made it important to Spain hundreds of years ago, when she held control over the ocean. Her trading ships sailed west across the Pacific from Mexico to the Philippine Islands, near the southeastern coast of Asia. On their return trips, the ships swung far to the north in order to get the help of winds blowing toward the northeast.

On the eastern side of the ocean the ships sailed south off the coast of California toward their home port in Mexico. If some rival country had settled the coast of California, this Pacific trade would have been threatened. To protect it, Spain encouraged the founding of settlements in California. Most of these settlements were called missions. They were made by priests and their helpers who went to live among the Indians. One of

the more famous of the missions is shown in the picture above.

The missions and other settlements of the Spaniards in California were all on or near the southern coast. Los Angeles and San Francisco, today the largest two cities in the state, were among them. A military post and a mission were founded at San Francisco in 1776. That was the very year in which the English colonists along the Atlantic seaboard declared their independence.

Grazing and farming. Life in early California was simple. Many cattle and sheep were raised. Much land that was good for grazing could not then be used in any other way. The winters were so mild that the cattle and sheep did not need shelter or special winter fodder. A few men could look after large herds and flocks. Hides and tallow were sent away by sea.

The missions had orchards, vineyards, and gardens. At some of them, there were orange trees and olive trees. The better gardens were on moist valley bottoms. Some trees and gardens were irrigated. In upland fields wheat and barley were grown.

The crops grown and the methods used were the same as those in Mediterranean countries with which the mission settlers were familiar. And of course the climate was like the climate of Mediterranean lands. It was a mild climate of rainy winters and dry summers.

Trading and manufacturing. Early California depended for many things largely on trade by sea. At first supplies came from Mexico. Later, many came in Russian ships. Finally the trade was largely with ships from Boston. These ships brought cloth, clothing, hardware, and dry groceries. In exchange they took furs, hides, and tallow.

At the missions, hides were tanned, tallow and soap were prepared, and wine, olive oil,

and flour were made. Some simple furniture was made, too.

Slow growth. The white population increased slowly. It included in time several hundred Americans. Some were sailors who had deserted their ships when visiting a California port. The rest had come overland, as hunters and trappers, as traders, or as settlers. There was no prospect, though, that very many people would come from anywhere or that the easy-going life of California would not continue. Suddenly, everything was changed by the magic of gold.

The great discovery. An American from Missouri settled on the Sacramento River, Figure 55, where the capital of California stands today. He built a stout fort there and was given a large tract of land. Trappers worked for him in the near-by mountains. Indians tended his herds and flocks. He built a tannery. His plans included growing rice and cotton on the valley bottom, and wheat and fruits on higher land. He decided he must have a flour mill to grind his wheat. Partly to get the lumber for it, he determined to build a sawmill.

No timber fit for use grew along the river near the fort. So a party was sent east into the mountains to choose a place for a sawmill, near good timber. The mill was nearly finished when, on January 24, 1848, gold was discovered. The news was taken down to the fort. Soon everyone there left to hunt for gold.

By summer, all California had heard the great news. Figure 56 shows some men hurrying into San Francisco on their way to search for gold. Three-fourths of the men who lived in San Francisco left their offices or stores or other places of work and rushed away to try their luck as gold miners. Farmers left fields of ripe grain. Men went on foot, on horseback, by wagon, and by boat to the fort on the Sacramento—the point on the river nearest to the gold deposits. Wild excitement gripped the people.

Figure 55. The Central Valley of California





Figure 56. Gold seekers at San Francisco.

Based on an old drawing

The rush of gold seekers. Now that news is flashed around the world by radio in no time, it is hard to realize how slowly information traveled when gold was discovered. The first report in an eastern newspaper of that exciting event was published almost eight months after the discovery. Gradually the news spread through the country, to Europe, and across the Pacific.

The next spring (1849) the greatest gold rush of all time got under way. Thousands of men moved out with wagons from the towns on the lower Missouri River, along the trails leading to California. The first of them started as soon in the spring as there was grass for their oxen and mules. Many suffered from heat and thirst and lack of food in the deserts beyond the Rocky Mountains. Many died on the way. Those who escaped from the deserts still had to cross the high Sierra Nevadas, Figure 55. That was a hard thing to do after snow began to fall on the mountains.

Thousands went by sea from Boston, New York, Philadelphia, and other eastern ports. Ships for the trip were taken from other work, especially from whaling. Old ships, not in use, were repaired and put in service.

Ships for California sailed from European ports, as well as from American ports. Forty-five vessels arrived at San Francisco in a single day.

Instead of making the long trip around Cape Horn, many vessels went to the Isthmus of Panamá. The passengers planned to cross the isthmus and take passage on other ships on the Pacific side. Part of the crossing had to be made along a jungle trail on foot or on mules. For several years there was no regular ship service between Panama and San Francisco. Many people met delay, hardship, and sickness on the isthmus. No route to the Golden West was easy.

Rapid growth. More than 80,000 people reached California by land or sea in 1849. They were called "Forty-niners." An even greater number arrived in each of the next few years. The population of California grew so fast that it was admitted to the Union as a state in 1850.

The Golden Gate and San Francisco. The Golden Gate is the world-famous entrance to San Francisco Bay, Figure 55. This great bay forms the largest and best harbor, really a series of harbors, on a rocky coast which has only a few harbors. Into it flow the

largest two rivers of California. These rivers have many branches that flow down to them from the Sierra Nevadas. Along the branches were the deposits of gold that drew so many people to California.

Somewhere on the shores of the bay a commercial city was certain to grow up rapidly. The mining region had to have a seaport. Great quantities of supplies could not come from the East by land. Several towns on the bay hoped to win commercial leadership, but San Francisco soon left the others behind.

San Francisco was a name well known to merchants in the eastern cities, while the names of its rivals were not. Then, too, the government made San Francisco a "port of entry"—a place where duties were paid on goods from abroad. So, from the beginning, incoming ships discharged their cargoes there. Seven hundred ships came in 1849. The population, which had been reduced for a time by the departure of gold seekers, grew from less than 500 just before the discovery of gold to more than 20,000 two years later.

Commerce and industries. For a few years supplies of all sorts were shipped by sea from the East to San Francisco. Clothing, boots, tools, flour, dry groceries, and canned goods were leading items in the trade.

Such things were to be expected. Some things were not. For instance, ice that had been cut in winter on lakes in New England was shipped to San Francisco. There was heavy loss from melting, of course, for the outbound ships had to cross the equator in the Atlantic and again in the Pacific. Then ice was obtained from the ends of glaciers in Alaska that reached down to the sea and, later, from small glaciers in the high mountains of California itself. Lumber, too, was taken out from New England until lumber made in mills on the shores of Puget Sound, Figure 7, drove it from the San Francisco market.

Before long, California was growing or making many things which at first came to it by sea. It even had enough of some things to ship part of them away. In and near San Francisco, sawmills, furniture shops, flour mills, a sugar refinery, and factories for making mining tools and machinery were built.

San Francisco then and now. There were high rock hills, steep-sided ravines, and big sand dunes in and about San Francisco. It had no good supply of fresh water. Fogs made parts of many days unpleasant. Almost every year one or more earthquakes occurred. Fear of earthquakes in early days discouraged the people from putting up brick buildings or high buildings. Many of the wooden buildings of the city were destroyed by fires. Most of these disadvantages were overcome.

No other city has such a setting as San Francisco. From some of the hilltops there are glorious views in bright weather of the great bay, the Golden Gate, and the sea. The picture shows part of the modern city as seen from an airplane. The edge of the bay is in the foreground, at the right. In the distance at the upper left is the ocean. Across the middle of the picture, between the bay and the ocean, is the strait that has been known as the Golden Gate ever since the days of gold.

Ships of every seafaring nation pass in and out under the high bridge that now spans the Golden Gate. "Here the Western World ends and the Eastern World begins."

In the mining camps. Within a year after gold was first discovered, deposits of it were found in the sand bars and on the banks of many creeks and streams that drain the lower western slopes of the Sierra Nevadas. The gold-bearing sands and gravels could be worked easily. Neither skill in mining nor expensive machinery was needed. A miner needed only a pick and shovel, and a pan or rocker in which to wash out the particles or nuggets of gold. Figure 58 shows some miners "panning out."



Figure 57. San Francisco and the Golden Gate

Courtesy San Francisco Convention and Tourist Bureau

The deposits of gold were on public lands. A miner did not have to get a permit for mining, or pay a fee to the government. He staked out his "claim," and went to work. This kind of mining, washing gold from sand or gravel, was called "placer mining." Later, gold was found in hard rock. Of course, the mining of such gold was far more difficult and costly.

The early mining camps in the mountain valleys were much alike. The crooked main

street in one of them followed the narrow bottom of the valley, at the side of the stream. The middle section of the main street was lined with stores, saloons, billiard rooms, restaurants, and lodging houses. Most of these buildings were made of wood. Steep paths or narrow streets led up the valley slopes or along side ravines. Rough, unpainted cabins or shacks or tents were scattered about. Such a camp might be overcrowded at one time and half empty at another. It might be de-



Figure 58. Panning gold

From an old drawing

serted entirely if word came of a "rich strike" somewhere else.

From gold to wheat. Soon or later, placer deposits of gold, that is, deposits in river sand or gravel, are worked out. Most of them last only a few years. The greatest production of placer gold in the Sierras took place only five or six years after the first discovery. In little more than ten years after the discovery, farming replaced mining as the leading industry of California. It has been first ever since.

Some of the men who turned first to farming grew potatoes and vegetables for sale in the mining camps. They brought high prices. After a time it was found that part of the great Central Valley of the state was well suited to growing wheat. Most of the land used for wheat had been without timber. Some wheat farms contained 20,000 to 30,000 or more acres. A traveler wrote: "I have seen a wheat field of 40,000 acres in the San Joaquin valley." Fields of wheat containing 1000 to 5000 acres were common.

The fields were plowed after the winter rains started and wheat was sown as soon as the land was ready. The crop was harvested late in May and in June. The grain was threshed in the fields, put in bags, and piled in the fields, along the roads, or at the sides of the early railroads until sold. There was very little danger of rain at that season. Most of the big wheat farms were later broken up into smaller farms.

Other crops were grown, of course, but no other compared with wheat. Corn was never nearly so important as in the eastern half of the country. It was said that much of the farm land was too dry and that the summer nights were too cool. Some corn was grown on moist valley-bottom land.

Irrigation farming. On the lowlands of southern California, farming depended from the beginning on irrigation. There was not enough rain for dry-land farming. In the Central Valley of the state, as on the western plains, drought was the greatest risk of the dry-land farmer. This risk and the demand

for crop products which needed more water than wheat needs led to the irrigation of more and more land.

Early irrigation in the Central Valley was carried on mostly in the San Joaquin Valley, which was the drier part, and on the east side of the San Joaquin River. More rivers flowed down from the mountains on the east side than from those on the west side and there was more water in them which could be taken out for irrigation. In time, too, much land there was irrigated by pumping water from wells.

As years passed, the list of irrigated crops became a very long one. Oranges, lemons, grapes, apricots, prunes, peaches, pears, cantaloupes, potatoes, lettuce, tomatoes, beans, and cotton are among the better known products of the irrigated farms. Even products which spoil quickly are shipped in large quantities to distant markets. They go by fast freight in refrigerator cars. Transportation to and from California has changed amazingly since the days of gold.

The new gold. The gold that was found along the mountain streams of California was the first great source of wealth in the state. Today, the water in the mountain streams is itself a new kind of gold, a leading source of new wealth. Great engineering works have been built to control and regulate some of the rivers that flow from the mountains. Many other such works are planned. Sometime all the mountain waters will be put to use—for irrigating land, making electric power, and other purposes. And this kind of gold, this liquid gold, will renew itself year

after year as long as rains and snows fall on the mountains.

Things to Remember about our Country

1. *More than 150 years ago, Spanish settlements were made in California, which became part of the United States in 1848.* Why did Spanish people make settlements there? Tell about early life in those settlements.

2. *A great discovery was made in 1848 which led many people to rush to California.* What was the discovery? Where was it made? Tell about the "Forty-niners."

3. *San Francisco soon became California's chief port and trade center.* What things helped it to grow where it did? Which of those things show in the picture of San Francisco today (p. 75)? How and why did trade and other work change there?

4. *About 10 years after the great rush, farming became the chief work in the state.* What part of the state was found to be good for wheat farming? Give two reasons for wheat-planting and wheat-harvest times there.

5. *Farming in the lowlands of southern California has always depended on irrigation.* Name some of the irrigated crops that have been grown there. How have transportation changes helped farmers there in recent years?

6. *Water in California mountain streams is liquid gold.* Tell why this is true.

Exploring and Finding for Ourselves

1. Find (Fig. 7) the lowland of central California and another lowland north of that state. In what states is that other lowland?

2. What large river flows across it?

3. In which part of it is a northward-flowing stream shown on the map?



Figure 59. On the Oregon Trail

Winning the Oregon Country

A land of promise. Somewhat more than a hundred years ago many people thought of the Pacific Northwest as a land of great promise.

Thousands of those people, facing dangers and hardships, journeyed to it in wagon trains like the one in the picture. They called it the Oregon Country. Today, much of it is in the western part of the state of Oregon, Figure 7.

Glowing stories were told about the Oregon Country. The rich soils and mild climate of the lowlands beyond the Cascade Mountains, Figure 60, would make certain large crops for export to Pacific countries. Farmers would prosper. All a man had to do, so ran one story, was to throw a handful of seeds from his back door and go to sleep. When he woke, his crops would be there for him.

There must be something real, it was thought, behind such a fancy story.

This was not all. The Oregon Country was said to be a healthful land. The fevers common to the Mississippi Valley were unknown there. Everyone thought that Congress was sure to give big farms to settlers in Oregon. Many were excited by the chance for adventure in a new land. One man said later that he went to Oregon "because the thing wasn't fenced in and nobody dared to keep me out."

Many of these people were members of families that had followed the frontiers, one after another, from the Piedmont Plateau to the Mississippi and Missouri rivers. They seemed always ready to move on.

Where to go. There was no use in moving to the plains at the west, between the Mis-



Based on an old sketch

souri River and the Rocky Mountains. A government explorer had called them the "Great American Desert." They were believed to be unfit for settlement (p. 66).

Beyond the Rockies stretched great plateaus and high plains which also were thought unfit for settlement. These plains, mountains, and plateaus had to be crossed, of course, to reach the Oregon Country. But the Oregon Country was the nearest new land of promise to which the United States then had a claim. California belonged to Mexico, which had won independence from Spain, and of course no one dreamed of the rich deposits of gold that were there.

American rights. The United States was not the only nation that claimed the Oregon Country, or that had claimed it. Spain once claimed it, but had handed over her rights to the United States. Russia once claimed it, but had withdrawn. For years the real contest for Oregon lay between England and the United States. Finally, our present north-western boundary was fixed by a treaty with England.

Some of the Americans who first went to the Oregon Country felt they were helping to uphold American rights there. It was a common saying that the flag would follow settlement. Before these settlers arrived, most of the region had been firmly held by British-Canadian fur traders. They had trading posts at well-chosen points on the Columbia River, Figure 60, and on some of its branches. But when thousands of American farmers built their homes in the disputed area, the United States had the advantage.

So the Oregon Country attracted American settlers for many reasons.

The long, long trail. The famous Oregon Trail led from the great bend of the Missouri River in western Missouri to the lower Columbia River and on through the gorge of the river in the Cascade Mountains. It was about 2000 miles long. It was the longest pathway of the kind ever used in America. Of course, it was far from straight. Part of the way was over rough land where many turns had to be made. Parts of the trail followed winding streams. Even the location of water holes, of

places where the animals might graze, and of wood for fuel called for loops and bends in the trail.

A hard journey. The journey to Oregon was made in canvas-covered wagons, most of them drawn by oxen or mules. It took five or six months. People needed to start in the spring as soon as there was grass for the animals, in order to finish the journey in the autumn before snow covered the higher ground.

At the Missouri River, parties were made up. Leaders were chosen. Plans were laid. Much was being risked in an undertaking about which little was known at first.

The wagon train in Figure 59 was making its slow way along a section of the Oregon Trail east of the Rocky Mountains, where it followed a river for many miles. The hardest part of the trail lay ahead, but in this section there was most danger of an attack by Indians. Everyone was watchful.

Most days on the trail were hard days. In many places the teams and wagons stirred up fine, choking dust. Sometimes teams were turned around by violent winds and wagons were upset, causing much confusion. Sometimes, too, loose cattle ran in fright for miles before a storm. They had to be rounded up, perhaps with difficulty and always after more or less delay.

Other delays and much trouble were caused by broken wagons, by tires that came off the wheels in hot, dry weather, and by wagon tongues that broke as the wheels bumped in and out of holes. Now and then a wagon train was delayed and losses were caused by heavy rains, by floods in streams, and by quicksands at stream crossings. There was trouble at times in finding game. Food ran low and people were ill.

Learning how. Of course, people who went to Oregon in the first years learned much that was helpful to people who used the trail in later years. For instance, they learned that wagon tongues should be

"jointed," that is, made in short sections, to keep them from breaking. Wagons, they found, should be not only strong but also light. Only well-seasoned timber should be used in making wagons for the journey.

People learned, too, how to protect their supplies. Bacon was put in sacks. The sacks, surrounded with bran, were put inside boxes. In this way the bacon fat was kept from melting away in hot weather. Sugar was taken in sacks of "India rubber." Flour was carried in strong sacks of double canvas. Matches were kept in tightly-corked bottles.

Some wagons were fitted out with double canvas tops. Extra parts were taken along for wagons and harnesses. It was found wise, too, to have several extra axes and hatchets and spades. Even with the best preparations, the journey was very hard and full of risks.

In the Willamette Valley. For some years about nine out of ten of the people who went to the Oregon Country settled in the Willamette Valley, Figure 60. It is the main southern tributary of the Columbia Valley west of the Cascade Mountains. After twenty-five years of settlement in the region, almost half the total population was still in the Willamette Valley.

The valley was fertile and there was enough rain for settlers to grow the crops they knew best, in the ways they had used in their old homes. There was timber along the streams. Back from the streams there were open woodlands and prairies. As a rule, the prairies were used first for grazing and later for wheat. Road-building in the valley was easy. The Willamette could be navigated by ocean-going ships for a few miles and by small boats much farther. There were places on the streams where sawmills and flour mills could be run by water power.

In spite of all these things, and nearness to the ocean, there was little chance for the settlers to export any surplus products, as they had hoped to do. Few trading ships entered the Willamette, or even the Columbia.

Then suddenly a market opened up in California, after the discovery of gold there. Many ships came to the Willamette. Twenty were there at once in the autumn of 1849, waiting for cargoes. Wheat, flour, vegetables, butter, eggs, and lumber were in great demand at high prices. Gold dust was paid for everything.

Some gold was found later in Oregon itself, but progress in the Willamette Valley was helped far more by California gold. Changes took place in a few years which, without California gold, might have required many years.

The Willamette Valley was the heart of the Oregon Country. Later it became the heart of the state of Oregon. It still is the heart of the state.

Portland. Portland, Figure 60, became in turn the chief city of the Willamette Valley and of the state. The first owner of land where Portland stands saw no future for the place and it fell into the hands of two New Englanders who had come by sea. One was from Massachusetts, the other from Maine. They felt sure that an important city would grow up in time on the Willamette at the head of ship navigation. They were at that spot. They built the first house there, put in a small stock of goods to sell, and by tossing a coin fixed on a name for the town they were founding.

The man from Massachusetts wanted to name the town Boston, after the largest city in his home state. The man from Maine wanted to name it Portland, after the largest place in his state. The man from Maine won the toss.

Active growth came to Portland with the trade that started with the mining boom in California. It was the first place on the Pacific slope, except San Francisco, to outgrow the pioneer stage. Before many years had passed, visitors talked about its tree-shaded streets, its comfortable homes, its churches and clubs.

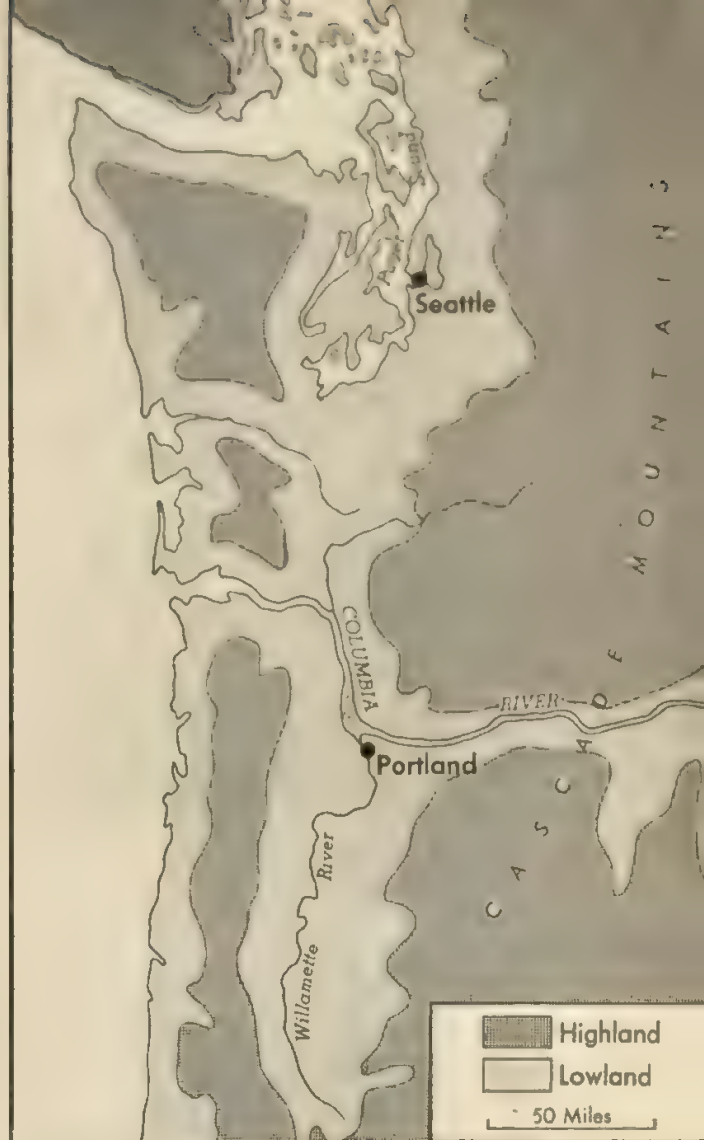


Figure 60. The Oregon Country

Beginnings on Puget Sound. Early settlers on Puget Sound, Figure 60, also owed much to the boom in California. The first trading vessel to come there from California wanted piles to be used in building wharves at San Francisco. This was the small beginning of the great logging and lumbering industry of the region. Five years later there were 16 sawmills on the shores of the Sound. Their best market was in California. Several of them were the beginnings of present towns or cities.

Seattle. Seattle, Figure 60, was one of the sawmill towns on the Sound. The picture in Figure 61 shows how Seattle looked as a small



Based on an early painting

Figure 61. Seattle, about 1855

village. Smoke is rising from the sawmill, showing that it was run by steam power, not by water power. The tree stumps in the foreground suggest that timber for the mill was cut at first close by. The ship lying offshore may have come from San Francisco for a cargo of lumber.

Seattle was first called New York, for it was thought that name suggested very well the future greatness of the place. Modesty led the settlers to change the name to New York Alki. The Indian word "alki" meant "by and by." While still a little village the place was renamed Seattle, after the friendly chief of a near-by tribe of Indians. Seattle did soon become the largest place on Puget Sound, just as its founders confidently had expected.

Seattle has a fine harbor and is near good passes in the mountains to the east. These things have helped its trade and its growth. It is nearer than Portland and San Francisco to the ports of Japan and northeastern China.

This, too, has helped. It also is the gateway to Alaska. This has been less helpful than expected, because Alaska is still, for the most part, an empty land.

Things to Remember about our Country

1. Somewhat more than 100 years ago, stories of the Oregon country made many people want to go there to settle. What reports that people heard about it made them wish to live there? Why at that time did they want to go there instead of to California?

2. The Oregon Trail was very long and the journey over it was very hard. What was the eastern end of it? The western end?

What two kinds of land that were hard to cross lay between western Missouri and the Oregon country? What dangers and hardships did the pioneers face along the way?

3. Many pioneers who went to Oregon settled in the Willamette Valley. Tell five things about the valley that made people choose it.

4. Portland's location in that valley was a good one for a trade center. Tell why.

5. Many settlers near Puget Sound depended on logging and lumbering. Seattle soon became the chief city there. Give reasons.

Exploring and Finding for Ourselves

1. Which is farther north, Boston or Portland (Fig. 7)? New York or San Francisco?

2. Of all the ports that have been told about so far in this book, which one is farthest north? Which is farthest south?

3. Suppose a plane flew from the Atlantic coast to the Mississippi along the east-west line numbered 40° . Suppose another plane flew along that line from the Rocky Mountains to the Sierra Nevadas.

What does the map (Fig. 7) show about the lengths of those two trips? Near what lake would the second plane fly?

4. The trip of that plane would be across the huge plateau "between the great mountains" which is told about in the next story.

Is most of the land it would cross higher than the Appalachians, or not so high?

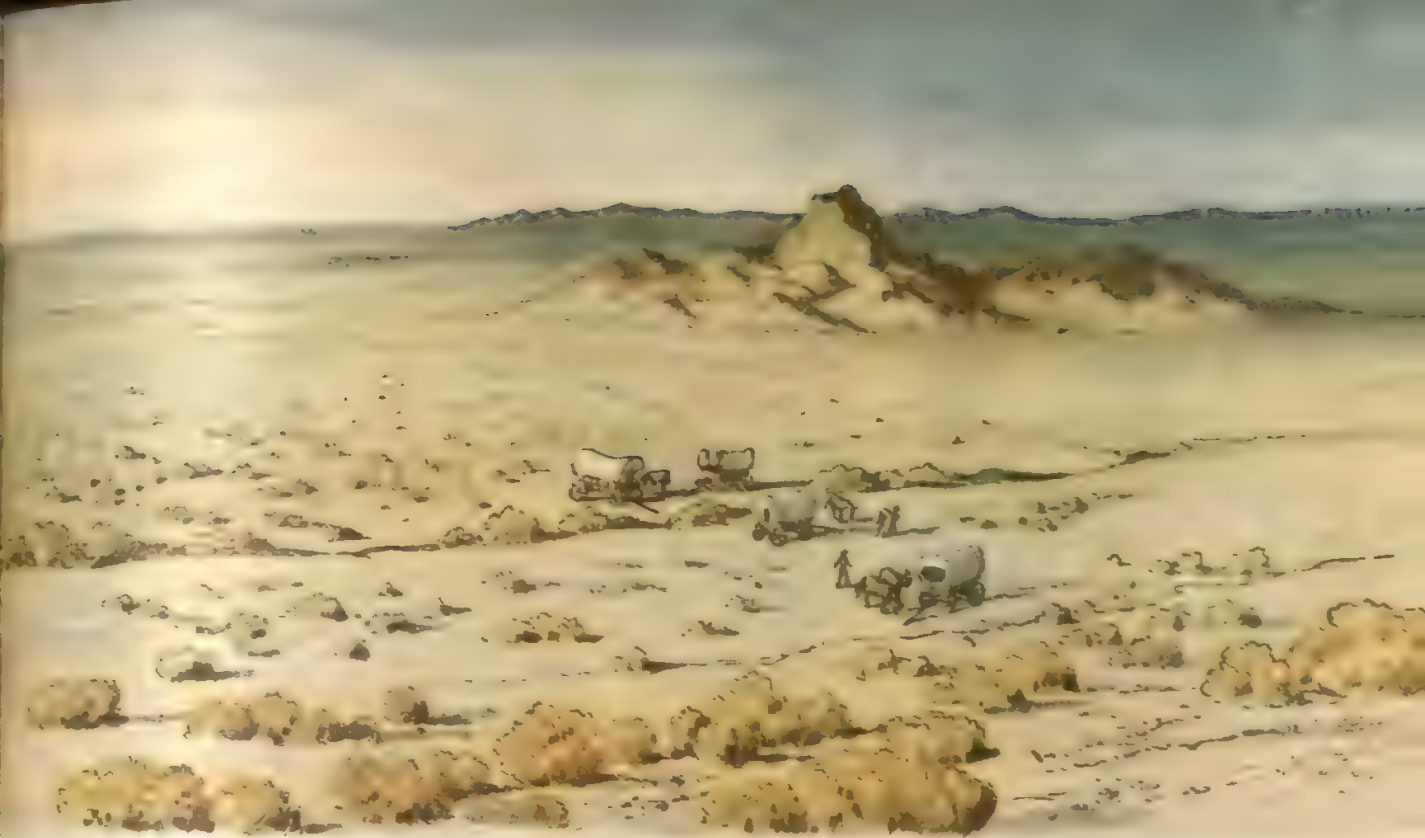


Figure 62. In the desert between the great mountains

Between the Great Mountains

Resting in the desert. The picture above shows a little group of early travelers in a great western desert. They had stopped to rest in the middle of the day at the side of a tiny stream, almost dry, where precious water might be had. All about them was the hot, dusty plain, broken by bare, rocky hills. This was a land which they had to cross, but one which they were eager to leave behind.

Vast spaces and few people. Between the Rocky Mountains on the east and the Sierra Nevadas and the Cascades on the west there is a huge region, shown on the map in Figure 7. Many parts of it look somewhat like the land in the picture. Over most of it little rain ever falls, except on the slopes of the mountains which here and there rise above the general surface. The dry ground between

the mountains is dotted with worthless brush. In some places, there is also a scanty growth of grass. In others, there are glistening beds of salt where nothing can grow.

In the mountains, where more rain falls, there is a better growth of grass. Scrubby trees grow on many of the foothills and give way to forests on higher slopes. Many streams sometimes flow from the mountains when rain falls on their slopes or much snow melts there. Most of these streams wither away on the edges of the lower land.

The longest river that rises in the region flows for some 250 miles across the desert only to sink at last into the thirsty earth. Two great rivers, the Columbia at the north and the Colorado at the south, cross the region, but they rise outside of it on the snow slopes

of the high Rocky Mountains. The Colorado crosses in a long series of deep canyons.

Like the men in Figure 62, most travelers on the early trails to California and Oregon hurried through this parched and sun-baked land to the fertile lands farther on. Few people wanted to settle along the way. In much of the region only a small population could possibly live. Within it even today there are empty tracts of great size. Taken as a whole, it is the most thinly-settled region in the United States. There are, of course, areas of fairly dense population scattered here and there through the region. Some of these areas are large. Most of them are small. Some were settled long ago, others only in recent years.

Three kinds of settlement. Time and again the discovery of valuable minerals has drawn people to areas within the region where otherwise there would have been no settlement. Some mining towns, once throbbing with life, are now "ghost towns." The last people in them left when the minerals were worked out. Deserted buildings face the empty streets. Other mining towns have had their best days and see ahead the time when they, too, will be ghost towns. Still others hum with work and look forward to years of growth.

Most of the widely scattered areas of fairly dense population depend on irrigation farming. Unlike the places that have lived on mining alone, these irrigated areas may never have to be abandoned. Some will gain in size and people if more water for irrigation is brought to them from the high mountains within reach.

Between and around the better settled areas are the wide stretches of desert that have had, and always will have, a very thin population. Lonely ranches in the foothills are far apart. Bands of sheep and goats that search for grass at times amid the sagebrush on the desert floor seem lost in the vast unsettled spaces.

A story about silver. Two men were hunting for gold in a dry ravine in western Nevada about ten years after the great discovery of gold in California. The place was some 20 miles east of the California boundary and a little south of the overland trail. The men dug a pit in the bed of the ravine, hoping to collect in it enough water so they could work their rocker. At the bottom of the pit they found some gold and much "black stuff" which they threw away as worthless. It later proved to be very rich silver ore. They had found immense wealth and did not know it.

The silver ore was in a great vein. This vein was about four miles long and several hundred feet wide, and it reached far down into hard rock. Many mines were opened to work the vein. At one time there were more than 30 of them. Some mines were failures. They did not strike good ore.

As the paying mines were made deeper, richer ore was found in them for a time. But the heat in the mines increased rapidly, too, and there was more and more trouble with water in the shafts. So a tunnel was started on the mountain side, far below the level of the mouths of the mines. It was put through the rock to the mine shafts and gave drainage and ventilation to them. It took ten years to build the main tunnel and two branch tunnels. Their total length was more than six miles. Such mining was as different as could be from shallow placer mining.

In about forty years the mines along this one vein, called the Comstock Lode, yielded about four hundred million dollars worth of silver.

A mushroom city. Several mining towns sprang up quickly near the place where the great silver lode was found. The best known was Virginia City. It was named after one of the discoverers, a man from the South whose nickname was "Old Virginia."

A visitor described the "wondrous city of Virginia" in this way when it was about a year old: "Frame shanties pitched together



Figure 63. A boom mining town

Based on an old print

as if by accident; tents of canvas, with empty whiskey barrels for chimneys; smoking hovels of mud and stone; coyote holes in the hillsides forcibly seized by men; pits and shanties with smoke issuing from every crevice; piles of goods and rubbish on craggy points, in the hollows, on the rocks, in the mud, on the snow — everywhere — scattered broadcast in pell-mell confusion.”

Figure 63 gives a later view of a main street in Virginia City. It was a busy place. But in time the mines produced less and less silver. As that happened, more and more people moved away from Virginia City. Without the mines, there never would have been a city there.

Tough problems. Transportation was one of the many tough problems that had faced Virginia City. At first the only way to take supplies there was on mule-back. Drinking water was brought from a mountain lake ten miles away. Lumber was hauled from saw-mills more than 20 miles away in California. Supplies were hauled all the way from Sacramento in wagons which took back the products of the mines.

About two years after the discovery of the Comstock Lode a company brought a dozen

camels to Nevada from central Asia. They did good work in the desert. But 14 years after the coming of the original herd Nevada barred them from public roads because they frightened horses. Part of the herd was sold to a Zoo in Philadelphia. Meanwhile, the difficulties of long-distance transportation were largely overcome when a railroad reached Nevada from Sacramento, along the line of the overland trail.

Of course, the riches yielded by the Comstock Lode led men to hunt for silver or gold in the Nevada desert farther east. New discoveries from time to time created other mining towns. Some of them grew swiftly, then dozed, and later died—all within a few years.

Though Nevada is large in size, it is still small in population. It has been held back by its climate. In a desert, water is more precious than silver or gold. Lack of water has been Nevada's toughest problem.

Making an oasis. A thousand years and more ago, men about whom little is known irrigated their crops in the valleys and between the great mountains of the West. Irrigation in the West is many times older, then, than the oldest American settlements. Where-



Figure 64. "Before and after"

Based on an old print

ever irrigation has been possible in areas of light and uncertain rain, men always have found it the surest way in which to win food from the land.

It was in Utah, between Great Salt Lake and the Wasatch Mountains, Figure 7, that this ancient way of farming was first used by Americans. That was about 100 years ago. These Americans were Mormon settlers from the East who were planning a new life in a new land. They were many hundreds of weary miles from the nearest settlement. They had to depend entirely on themselves. They had to depend, too, chiefly on farming. And to farm successfully they had to irrigate. Without a day's delay some members of the first party to arrive began work to turn water from a small stream out upon the land.

Along the western base of the Wasatch Mountains there is a plain that was built up by material left by streams flowing from the mountains. The rainfall in the mountains is much greater, of course, than that on the plain. Many streams, fed by rains and melt-

ing snows on the mountain slopes, flow in steep valleys down to the plain. As they enter the gently-sloping plain, they flow much less rapidly than before. So they are forced to drop the material they had moved along their upper channels. The deposits of the many streams got larger and larger. Finally they joined, making what is called a *piedmont alluvial plain*. On this piedmont plain, fertile in most places, the Mormon pioneers built their towns and laid out their farms.

Salt Lake City. The first land chosen for settlement was that on which Salt Lake City stands (Fig. 7). It was between two forks of a stream that flowed from the mountains to the plain. A city was laid out on a generous plan, with large building lots and very wide streets.

At first most of the houses were built of sun-dried brick, known as adobe. They were very plain in appearance. Within a few years, however, visitors were impressed by the attractive homes of hard brick, the business houses of stone, the shade trees along the wide, well paved streets, and the clear water

running in the gutters. From the beginning, Salt Lake City has been the center of the life of the oasis that was made in the desert by the Mormons.

Farm villages. A farm village was laid out in the midst of each tract of land which the Mormons planned to irrigate. It was built on or near the stream from which water was to be taken. The farmers lived in the villages, going to and from their outlying land.

Grain, potatoes, vegetables, alfalfa, and finally fruits became leading crops. The picture in Figure 64 shows a Utah farmer at work in an irrigated field of vegetables. To the left of the field is desert land that has not been supplied with water. This picture might be called "before and after." All these Utah farmers kept some stock. Herds of cattle had been driven from Illinois by the first settlers.

Saving the water. In the early years only simple dams, many made of brush weighted down with stones, could be put in at suitable points along the streams on the plain. By

these dams, water was turned into canals and ditches that led to the fields.

Later, large storage dams were built in some of the mountain valleys. They control the flow of the streams and save water. From the beginning, care was taken to divide the life-giving water fairly among the farmers.

The Mormons have the honor of being the first American irrigators. They deserve great credit for what they did. The things they learned as irrigators helped many other settlers.

Using the grazing lands. The poorer grazing lands between the great mountains have been used chiefly for sheep, though there are many cattle ranches in the foothills of the mountains. Sheep can get along in places too dry for cattle. They eat grass closer than cattle do and also feed on many desert weeds. Sheep grow to full size sooner than cattle.

The sheep in Figure 65 are finding a little food near the ranch house of the owner. This sheepman built his home at the mouth of a valley that leads back into the mountains.

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Figure 65. On a sheep ranch



Most of the first flocks of sheep that were driven into the region came from California or New Mexico. California sheepmen had earlier brought merino sheep from Vermont. Merinos produced more wool and better wool than any other kind of sheep. When, years before that, the making of woolen goods became important in New England, merinos had been brought from Spain to Vermont. It became a famous sheep-raising state. And much earlier still, about 200 years earlier, sheep had been taken from Spain to Mexico and on into what is now New Mexico. There, in the long course of time, a type of sheep had developed which was well suited to the trying conditions in the mountains and on the desert plains.

Up and down. In the winter time sheep are commonly kept on the ranches of the owners in the foothills. There they are fed chiefly on alfalfa that was grown on the ranches or bought from farmers. In either case it was grown, of course, by irrigation.

In spring many sheep are grazed for a time on the desert floor. The scant pasturage there can be used before grazing is possible on the high mountain ranges. After the sheep are sheared in late spring or early summer, they are driven by slow, easy stages up into the mountains to graze during the summer. In autumn they are driven down again, ahead of cold weather and snow, to the lower pastures and the home ranches. Year after year flocks of sheep, and in many places cattle, too, are shifted back and forth, up and down. So the desert and the mountains have been made to work together to produce meat and wool and hides.

Public lands. Most of the grazing lands, both on the desert floor and in the mountains, are part of the public domain. They belong to the nation. But for many years the nation did nothing to control their use and prevent injury to them.

Too many sheep were grazed on much of

the public land. Year after year it furnished less and less pasturage. Then grazing in the public forests was controlled, and the pasturage there improved. There was still no control outside of the forests. A few years ago grazing on the public lands of the desert was also finally put under control. Everyone concerned was better off.

There are other ways in which the deserts and the mountains, managed together, could help the people. Soon or later they will be made to do so, in every possible way.

Things to Remember about our Country

1. *In most of the huge plateau which stretches from the Rocky Mountains to the Sierra Nevada and Cascades, little rain falls. Tell how much of the land there looks.*

2. *Though much of the region is empty, three kinds of settlements are scattered here and there in it. What three kinds?*

3. *Silver played a large part in the story of Nevada. Why was silver mining there unlike placer mining in California? Why do many mining towns become "ghost towns"?*

4. *A large oasis was made near Great Salt Lake. In what two ways did the streams in the Wasatch Mountains make that possible?*

Tell about the farming work of the Mormons and about the ways in which they controlled and divided the stream waters.

5. *"The desert and mountains were made to work together to produce meat and wool and hides." Where are many of the cattle ranches? Why are poorer grazing lands used for sheep? Where are many of the sheep kept in winter? In summer? Why?*

What happens to grazing lands on which too many sheep are kept? What has been done to prevent this on public lands?

Exploring and Finding for Ourselves

1. The region between the great mountains includes all or part of how many states (Fig. 7)?

2. Are those states larger than states east of the Mississippi, or smaller?

The Coming of the Railroads

Winning their way. Figure 66 shows the first passenger train on one of the early railroads. Figure 67 shows a streamlined passenger train of today. The differences between the two are amazing. So it would be a great mistake to think that the early railroads were much like the railroads of today.

It would also be a mistake to suppose that all people were glad to see the coming of railroads. Actually, many people were strongly opposed to them. The railroads had to win their way.

Fears that came true. Of course, many people fought the railroads because they feared their competition. Men who owned packets on the Erie Canal, for instance, or steamboats on the inland rivers, were afraid that railroads would take trade away from them. Their fears came true.

Strange stories. Some people opposed railroads at first for strange reasons. For instance, when plans were made for a railroad west from Boston across New England, farmers objected. They said that sparks from the locomotives would burn the wool off the backs of their sheep.

The rivals of some early railroads tried in strange and foolish ways to hold their trade. This story tells of one instance. A railroad was built from Boston to Providence, a seaport in Rhode Island (Fig. 7). This railroad was to be part of a route by land and water between Boston and New York City. Passengers and freight that went all the way between those cities by water had to go around southeastern New England, past dangerous shoals where many ships had been wrecked. The combination route by land and water was shorter and safer.

For those very reasons, stagecoaches had been running between Boston and Provi-

dence. They carried many people and, when the railroad was built, the stagecoach owners were determined to hold their business at all cost. So they offered to carry passengers from Boston to Providence for nothing and give them a free dinner when they got there. Of course, such efforts were useless. Horse-drawn stagecoaches could nowhere compete directly with trains after the railroads and trains had been somewhat improved.

More strange stories. There was plenty of chance to make improvements, as the following stories show. In Illinois, a mile race was run between a locomotive and a pony. The pony won. Conductors on one railroad were ordered not to collect tickets from passengers while their trains were in motion. It would be dangerous. The engineers of another road were told to be sure they had all their cars when starting. It sometimes had happened that an engine and the front cars of a train had pulled away, leaving the back cars at the station.

One autumn more farm products had been received at stations along a railroad running out from Detroit than it seemed possible to get to Detroit before lake navigation closed for the winter. To help move this freight, the officials of the road decided to put on a train for night service. But they said that they hoped it would not again be necessary to run trains in the dark.

Disadvantages. All the early railroads were very crude. The road beds were poor. The rails were light. The engines were small and had little power. The cars, made of wood, were not strong. The trains were run without the help of orders sent from place to place by telegraph.

The day of iron bridges had not come, either, and only small streams were spanned

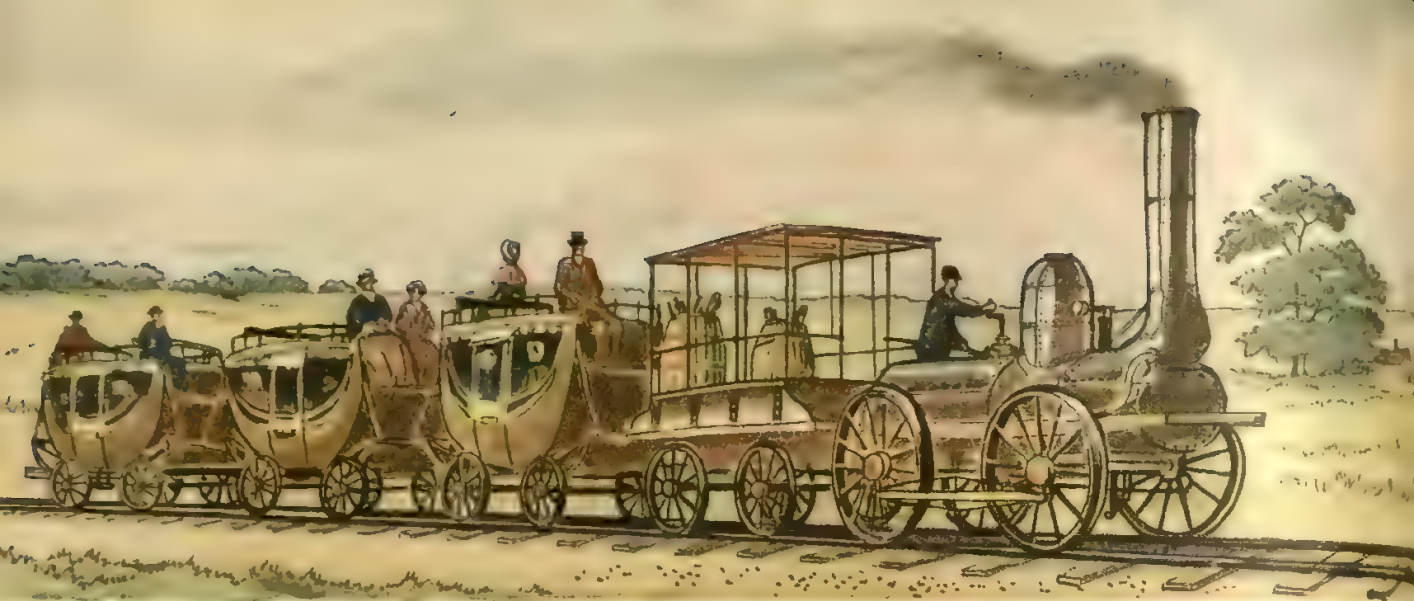


Figure 66. When railroads were new

From an old drawing

with wooden bridges. Lack of a bridge where a river flowed across the line of a railroad caused trouble and delay. Goods and passengers had to be shifted in boats between the sections of road on the two sides. The early railroad companies were themselves small and had little money. Eleven companies originally owned and ran links in the line between Albany and Buffalo.

Improvements. Year by year improvements were made in the railroads, slowly at first, then rapidly. Year by year more miles of

railroad were added, also slowly at first and then with mounting speed. At last all parts of the country were covered by a network of railroads not equalled anywhere in the world.

From sea to sea. There were, of course, many steps in building railroads toward the west—many goals along the way across the country.

All the main seaports along the Atlantic coast hoped to increase their trade with the interior by building railroads. At the north, a railroad was built from Boston to Albany

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Figure 67. A modern passenger train



to link up with the Erie Canal. Boston merchants hoped the railroad would give them a share in the trade of the Great Lakes region. At the south, a railroad was built from Charleston to the Savannah River where the river leaves the Piedmont Plateau. Charleston wanted to get the cotton trade of that section. Every seaport of importance between Boston and Charleston had its special plans. Some succeeded, while others failed.

New York City wanted a railroad to Lake Erie. Philadelphia and Baltimore each wanted one to the Ohio River. Railroads from these cities (two from New York) got to these goals within about three years of the same time. The greatest two waterways beyond the Appalachian barrier had been reached from three great ports. And the barrier had been crossed first where it is narrowest and lowest.

The next goal in westward building was Chicago, on Lake Michigan. Most railroad men realized that Chicago would become the inland hub of the railroad system. Its position at the corner of the Great Lakes seemed to make that certain.

Beyond Chicago, several railroads were built hurriedly to the Mississippi River, the next goal on the march to the west. These railroads brought to Chicago and to the northeastern seaports much traffic that without the railroads would have moved down the river to St. Louis and New Orleans. Steamboat trade fell away on the rivers. The growth of New Orleans slowed down. New York City leaped ahead.

The Missouri River had never been much of a highway. Unlike the Mississippi, it carried little traffic that westward-building railroads could capture. Beyond the Missouri two or three railroads raced to the western plains to get the business of taking cattle back to the meat-packing cities. But for some years all eyes had been fixed on the Pacific coast as the final goal to be reached by American railroads.

The first transcontinental railroad. Several government surveys were made to find the best route for the first railroad to the Pacific. No road to the western ocean could be built along any route without government help, for the costs and the risks were too great. The route finally chosen followed for long distances, but not nearly all the way, the general line of the overland trail to California.

The road was built by two companies. One worked west from the Missouri River, from the place where the city of Omaha now stands (Fig. 7). The other worked east from Sacramento in California.

When work began at the eastern end, the railroad from Chicago to the Missouri River opposite Omaha had not been finished. Supplies were hauled by wagon halfway across Iowa or were taken in boats up the Missouri River. Hardwood timber for cross ties was cut in Indiana, Ohio, and even as far east as Pennsylvania and New York. Mules and workmen had to be brought from the East.

The Indians of the plains, fearing that the railroads meant the end of their way of life, were hostile. Often the workmen had to drop their tools and seize their rifles.

The company that built the road eastward from Sacramento had even greater difficulties. There was plenty of timber on the slopes of the Sierras, of course, but railroad iron, spikes, tools, and other things had to come from the East by sea, all the way around Cape Horn. It was hard to get laborers, and many men were brought from China to work on the road.

Snow lay 60 feet deep near the highest point to be crossed in the Sierra Nevadas. Tunnels were dug through the snow and ice so that men could work on the road bed. Later, many miles of snow sheds were built over the track to let trains cross the mountains in winter. In parts of the Nevada desert, drinking water for the men had to be hauled 40 to 50 miles.



Figure 68. The last spike

Based on an old print

On May 10, 1869, the two roads met near the northern end of Great Salt Lake. Figure 68 shows part of the ceremony held that day on the spot. Four special spikes were driven into the last cross tie—two of gold and two of silver—gifts of California, Nevada, Idaho, and Montana. Only 43 years after the first American railroad, only two miles long, had been built in Massachusetts, railroads reached entirely across the continent, from sea to sea. Great celebrations were held. Bells rang out in every town and city in the land.

Things the railroads did. Railroads opened up to settlement many areas that had been hard to reach before. They brought farmers closer to markets. They made possible new crops in many sections. In these ways and others they increased land values.

Before railroads came, fruits and vegetables that spoil quickly could be sold only near the farms on which they were grown. City people could buy them for a short time only, when they were ripe on the neighbor-

ing farms. Refrigerator cars and fast train service changed all that. Georgia shipped peaches to Philadelphia. Mississippi sent strawberries to Chicago. California furnished ripe apricots and cherries to New York City. The "season" for such things in city markets was made much longer. Lettuce, tomatoes, and various other vegetables could be bought throughout the year.

The larger cities of the United States are seaports, lake ports, or river ports. They were important cities before railroads came. But they could not have grown to their present size without railroads. Not enough food for their people could reach them steadily by other means. And the railroads bring raw materials for their factories and mills. The railroads also take away their manufactured products. Without railroads, these cities could not have their great industries.

Figure 69 shows one of the railroad yards near a large city. Without such yards, not enough trains to meet the needs of the city

could move in and out. The railroads are the life lines of the city.

At the same time that railroads helped the growth of cities that already existed, they caused a host of villages and small cities to spring up. These new places on the railroads were centers where products from the surrounding countryside were shipped. They were also centers where goods that came by rail were sold.

The railroads used great quantities of iron and steel for rails, engines, cars, and other things. This helped iron-ore mining and steel making. They used great quantities of coal to run their engines. This helped coal mining. They also helped mining by hauling mine supplies and mine products.

In these ways and countless other ways, railroads aided the growth and progress of the country. They carried the mails. They carried millions of passengers each year. They made neighbors out of people living thousands of miles apart. They were a mighty force in the building of the nation.

New wonders. Today, perhaps more than ever before, transportation is the very life blood of the nation. And great things are happening in transportation—in railroad transportation, automobile transportation, and airplane transportation. The age of greatest wonders in transportation may still lie ahead.

Things to Remember about our Country

1. *Only 43 years after the first little railroad was built in Massachusetts in 1826, railroads reached from sea to sea.* Tell stories that show why railroad building went ahead slowly for several years after 1826.

2. *As railroads spread, they linked together the chief trade centers in the settled parts of the country and helped those centers to grow. They crossed unsettled parts of the country and helped people to settle in them. They helped our country in many other ways.*

Where was a railroad built to link a New



Figure 69. Life lines of a city

England port with the L-shaped lowland?

Railroads built from three other eastern ports linked the Atlantic coast with what two great waterways beyond the Appalachian barrier?

Why were Chicago and the Mississippi then goals to be reached as soon as possible?

What was the chief goal beyond the Mississippi? Tell the story of how the first trans-continental railroad was built.

Tell how railroads have helped many kinds of work in our country.

Exploring and Finding for Ourselves

Read, in order, all sentences in *Italics* in "Things to remember about our country" on pages 16–17, 24, 28, 32, 36, 45, 49, 54, 58, 65, 70, 77, 82, 88 and 93. Skip everything that is between those sentences in *Italics*. Together, those sentences tell a brief story of our country in earlier times.

After reading that story carefully, try to tell one much like it in your own words. Then see how well you can use pictures and maps in pages 1–93 in telling *reasons* for the different things pioneers did in different parts of the country.

Our Natural Resources

This great land. The stories on earlier pages have told something about how the American people settled this great land. The first settlers winning a foothold here and there along the Atlantic coast. People tramping over the Appalachians to make their homes in the western wilderness. Spreading farms and new towns along the great rivers, soon crowded with flatboats and steamboats. A procession of sailing vessels and steamers on the Great Lakes, carrying westward a host of settlers to fill the prairies and build cities on the Lakes. Wagon trains making their long, weary way to the Oregon Country. A wild rush by land and sea to the gold fields of California. The first transcontinental railroad, built swiftly to bind the country together. All this was part, a great part, of the building of America.

Along the way from sea to sea, forests and grasslands were replaced by cultivated fields. Wild animals gave way to herds and flocks. Little villages grew into big cities. The nation got richer and richer.

The Americans who made settlements across the continent left to later generations a truly great land. All Americans love its forests and rivers and lakes, its mountains and plains, its cities and farms. But this is not enough. All Americans, generation after generation, should also help to keep their land great—to keep it a good land in which to live.

Using and wasting resources. Most Americans believed for many years that the natural riches of the country could never run short. True, the forests in some places were soon gone, but there always would be plenty of timber somewhere. The fertile top soil might be washed by rains from sloping fields in one place, but new land could always be

had for farming in some other place. So people once thought.

As long as anything useful is very abundant and cheap, people may easily treat it carelessly. They may waste more than they use. They may use more than they need. The American people were careless for many years about their *natural resources*, as useful things provided by nature are called. They thought the resources would last forever.

Later, the people realized that most of their natural resources really could be used up or worn out. They saw that in time their rich land might become a poor land. They saw that in seeking their own welfare and the welfare of future Americans they must also look out for the welfare of the land. The two things could not be separated.

Seeing these things, the nation turned against waste of natural resources. However, it is also against hoarding them. The nation believes that its natural resources should no longer be used carelessly. It believes they should be used wisely and well.

The following paragraphs tell about old ways and new ways in handling natural resources.

The forests. Nearly half of the United States was once covered with forests. They stretched westward, with hardly a break, from the Atlantic Ocean to the prairies. Beyond the grasslands of the Great Plains there were forests on many mountain slopes.

To begin with, these forests, taken together, had in them about 500 kinds of useful trees. Nowhere else in the world was so large an area covered with so many kinds of trees. Figure 70 shows the beauty of one forest, with its towering trees and its carpet of ferns and rich undergrowth. Such a forest is seldom seen now. Once it was common.

Friend and foe. To the early settlers the forest was both a friend and a foe. It furnished them timber for houses and boats, rails for fences, wood for fuel, material for tools and wagons and furniture. Even wood ashes were useful. Potash from the ashes was used for making soap. The forest was a friend, then, in many ways.

On the other hand, an immense amount of work had to be done in clearing forest land to make room for farms and roads and towns. For many years only a small part of the timber that was cut could be used. The brush from trees that were cut had to be piled and burned. Most of the logs had to be rolled together and burned. The stumps had to be dug out of the ground and burned. So most of the forest was looked upon as an enemy. It was something that must be fought with ax and fire.

Cut out and get out. Of course, trees were cut down in some places to sell the timber, not to use the land. Early shipbuilding in New England, for instance, called for much timber. As years passed, more and more lumber was needed for more and more uses. In time, logging and lumbering became a great business. Lumbermen followed up the stands of better timber from coast to coast, with a big swing into the forests of the South and a big jump across the treeless lands of the West.

Logging and lumbering were carried on in a wasteful way. A forest, like a mine, was something to be worked out and abandoned. The rule was to "cut out and get out."

Most lumbermen did nothing to help new trees grow on cut-over lands. They did not leave seed trees. They did not try to protect small trees from injury when the larger trees were cut. They left the ground strewn with branches and with other rubbish from logging. All this material dried out and became a fire trap. Every year there were many fires in old logging areas. The cut-over, burned-over lands left behind by the lumbermen

were really man-made deserts—dead lands that produced little or nothing of value.

In time, too, the uncut trees on vast areas had been injured or killed or entirely burned up by forest fires. For many years more live timber was destroyed by needless forest fires than was cut for use.

Different ways and views. The ways in which early settlers treated the forests were necessary. The ways of the lumbermen were not necessary. They were ways that paid, and so it was natural to use them when timber was very abundant.

Of course, the best ways of using any resource at one time may be bad ways at a later time. This was true about forests. Conditions changed as time wore on. The forests got much smaller. Lumber cost more than before and much of it was not so good. It might soon be hard to get lumber.

Fortunately, the American people have seen for years now that they could not get along without widespread forests.

The need for forests. Timber always will be needed for making many, many things used in everyday life. To meet this need, crop after crop of trees must be grown on much land. They can be grown mostly on land that is not fit for farming. Part of this land is now ugly wasteland. It was made so by the old ways of logging and by fires.

A forest cover always will be needed on all steep mountain slopes where trees will grow. The forests will help to slow down the flow of water from rains and melting snows. Water flows swiftly down steep, bare slopes and may do much damage.

To take good care of forests will mean work for many people. These people will plant seedlings and cut out dead trees and diseased trees. They will harvest trees that are ready to use for lumber, fight forest fires and try to prevent them, and do other useful work.

Well-kept forests always will be visited by motorists and campers and hunters and fish-





From photograph by United States Forest Service
Figure 71 (above). Destroying the land

Figure 70 (to the left). A forest untouched by man
From photograph by United States Forest Service

Figure 72 (below). Saving the land
From photograph by Soil Conservation Service



ermen. Under proper rules the forests and their streams will be playgrounds for millions of people every year.

Forests for the future. Much has been done to make these things sure for the future. For instance, forests owned by all the people, called National Forests, are kept on many mountains and on some lowland areas not needed for farming. They are under the care of the United States Forest Service, which is in the Department of Agriculture.

Some states have state-owned forests. Some counties and cities have "forest preserves." They are managed chiefly as playgrounds. Some states also have laws that require careful logging, help prevent forest fires, and aid landowners in growing timber.

Forestry, as taking care of forests is called, has made great strides. Many lumber companies now use some of the methods of modern forestry. Year by year the outlook for our forests is better.

Good farm, poor farm. Most of the land on the farm partly shown in Figure 71 has been used year after year to grow cotton. The soil was rich when the land was cleared. It produced large crops. But the rainfall was heavy. Each year the water washed away a thin layer of the fine top soil.

In places the rains made hollows in the ground, like the one in the front of the picture. Once started, these hollows, called *gullies*, grew rapidly. Water ran into them whenever it rained. The running water carried away more and more of the earth. The farm was being robbed of its soil.

Year by year the farmer got smaller crops. But he did nothing to hold his soil in place or to stop the growth of the gullies. He just tried to get what he could from the soil while it lasted. He once had a good farm. Now it is a poor farm. He cannot much longer make even a poor living from it. He will be forced to abandon it and move away.

Soil that moved away. There is nothing unusual in the story that has just been told

about one farm. More or less soil has been washed away from almost every sloping field that has been cultivated anywhere. The loss on gentle slopes in one year or in several years may be very small. It may be too small to see. But in time the results become all too clear.

Many millions of acres of farm land have lost all the top soil that once covered them. The farmers are cultivating the coarser, less fertile material from which the top soil was washed away. Many more millions of acres have lost part of the top soil they once had. Millions of acres of farm land have been damaged or ruined, too, by gullying. Today the soil needs help against washing and gully-ing on about nine acres out of every ten acres of the nation's farm land.

A national problem. It is easy to understand the great importance of controlling *soil erosion*, as soil washing and gullying are called. We depend on soil for most of what we eat and wear. Then, too, the soil removed by water from fields and pastures may do much harm where it is dropped.

Some soil is dropped in the beds, or channels, of streams. It is called sediment. The sediment helps to cause floods, for the partly-filled channels cannot hold as much water as before. The sediment may injure navigation by making stream channels and harbors shallower than they were. Storage reservoirs behind many dams are filling up gradually with sediment. So in time the supply of water in the reservoirs for cities, power plants, irrigation, and manufacturing may be much smaller. Soil erosion is very harmful in many, many ways. The control of erosion is a national problem. It is important to all the people.

Saving the soil. The government recognized all these things. So some years ago a new agency, called Soil Conservation Service, was set up in the Department of Agriculture. It studies ways of controlling erosion and helps landowners save their soil. The man

who owns the farm shown in Figure 72 was one of the first farmers in the United States who agreed to cooperate with the Service. Now hundreds of thousands of farmers cooperate in caring for their soil.

This man works his land along level lines, not up-and-down the slopes. Each furrow he plows and each row he plants is level. Each one of them helps to check the flow of surface water down the slope. That lets more water soak into the ground, where it is needed.

The picture shows that several crops are grown in level strips, one above another. Strips used for crops that must be cultivated while growing, like corn, are separated from one another by strips used for crops, like wheat, which are not cultivated. There would be more erosion if a slope were used for corn from top to bottom. By such means this farmer saves his soil and keeps up his crop yields.

Some farmers make benches, called terraces, to help keep the soil on steep fields. Some grow grass or trees on steep land. There are many ways of preventing, or at least slowing down, soil erosion. Some ways are better than others, of course, in any particular place.

Water resources. Without water, man could not live. Some plants can grow in water, without soil. But no plant can grow in soil without water.

Although water is so necessary to us, we must control it if we are not to suffer. We must control it to reduce soil erosion. We must control it to avoid damage by floods. We must store it in reservoirs for use in making electric power and in irrigating dry lands. We must control it for many purposes.

Too often in the past people have paid little attention to the dangers of water that is not controlled. Too often water has been misused or wasted. Towns have been built on valley bottoms that are not safe from floods. As a result, many lives and much property have been lost. Vast sums have been spent to aid navigation on rivers that never

can be important highways. So the money was wasted. Year after year huge quantities of water have flowed unused to the sea which could have been made to do useful work along the way. Many mistakes of other kinds have been made.

Fortunately, great changes are now under way. More and more the flow of surface water across fields and pastures is being controlled. More and more the flow of rivers, even such mighty rivers as the Mississippi and the Columbia, is being regulated. Year by year more rivers are being "harnessed" at dams and power plants. Sometime the greatest possible use will be made of all the water resources of the country, for the greatest good of all the people.

A word about minerals. Under the surface of their great land the American people found rich deposits of most useful minerals. These mineral resources greatly helped the progress of the nation. Try to imagine, for instance, a lack of iron for ships and railroads, for bridges and buildings, for tools and machinery.

The very fact that there was so much of so many useful minerals made people careless and wasteful about them. Let natural gas tell its story. It is an ideal fuel for many purposes. Years ago in West Virginia it was burned day and night for years at a stretch in lamps along roads, in towns, and on farms. Surely the lamps were not needed when the sun was shining.

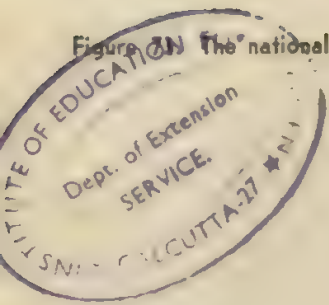
Every day for years in California enough gas was allowed to go off unused into the air from oil and gas wells to do the work of 25,000 tons of coal.

Coal has its own story. Half as many tons of coal have been lost or wasted in mining it as have been produced.

Happily, recent years have brought many new and better ways. From now on we should try to use our minerals and all our other natural resources so that this may always be a good land in which to live.



Figure 74. The national Capitol



Our National Capital

Washington, D. C. The city of Washington is the capital of the United States. It stands on the Maryland bank of the Potomac River (Fig. 7), but it is not in the state of Maryland. The tiny part of the country which was set aside for the capital is called the District of Columbia.

Each year, thousands of the American people come to see their beautiful national capital. In famous buildings in Washington the chief work of governing our great country is carried on.

The Capitol. One of those buildings is the Capitol. It is often called "the building first in the hearts of all Americans." In the Capitol, our Congress meets to make laws for governing our country. And in our Congress, there are men or women from each of the 48 states. Those in the Senate are called Senators. The others are members of the House of Representatives.

The picture above is a front view of the Capitol. The building faces east, away from the Potomac River. Its opposite side is seen in the airplane picture of Washington in Figure 74. This picture was taken from a plane above the river.

Sandstone from Virginia and marble from Massachusetts are in the walls of the Capitol. Maryland marble was used in its columns. At the top of its great dome stands a bronze statue of Freedom.

The Supreme Court Building. Another famous building in our capital is used by the Supreme Court of the United States. It is the building a little beyond the left wing of the Capitol in Figure 74.

The Supreme Court is the highest court of the country. The Justices of the Supreme Court make decisions in cases that cannot be tried in lower courts and in cases which are referred to them from those courts.



Figure 74. The national capital

Honoring our Presidents. The President of the United States is head of our national government. Both the President and Vice-President are elected by the people of the whole United States.

For George Washington, the great first President of our country, our national capital was named. And a beautiful monument has been built there in his honor. This tall monument is a shaft of white marble that towers almost twice as high above the ground as the Capitol. In the view above, Washington Monument is reflected in the long, narrow pool near it. From the top of this monument, one can see on clear days far

over the city and the wooded countryside near-by.

The Lincoln Memorial, built in memory of Abraham Lincoln, is a lovely white building in Potomac Park, between Washington Monument and the river. It stands near the eastern end of the famous Arlington Bridge across the Potomac. In Figure 74, it can be seen near the center of the lower edge of the picture.

Some of the broad, tree-lined avenues seen in Figure 74 have been named for Presidents. In many such ways, the great leaders of our government have been honored in our national capital.



Figure 75. The White House, seen from the south

© Charles Phelps Cushing

The White House. The white mansion in the picture is the home of the President of the United States. It is called the White House. In this famous old home, all our Presidents except Washington have lived. It was planned by an architect from South Carolina and built of stone from Virginia.

Presidents have planted some of the great elms, oaks, and other trees in the grounds around the mansion. The little park shown near the left edge of Figure 74 joins Potomac Park and the White House grounds. The side of the mansion shown in the picture faces due south toward that park and the monument to Washington.

The chief executive. To help him carry on, or execute, the work of governing the country, the President chooses a Cabinet of ten members. Making laws is called *legislative* work. The work of courts is called *judicial* work. The work of the President and the members of his Cabinet is called *executive* work.

The President often is called, then, *our chief executive*, and the White House is spoken of as the *executive mansion*. The executive offices of the President are in a building on the west wing of the White

House. In the picture, it is hidden by the trees at the left.

Many kinds of work for the country. Each member of the President's Cabinet is the head of a government department. For instance, the Secretary of Agriculture is the head of the Department of Agriculture. The President, of course, is the Commander-in-Chief of all our armed forces. The Secretary of the Navy is the head of the Navy Department, and the Secretary of War is the head of the War Department.

Many large buildings are needed in the capital for the work of the ten great executive departments. In Figure 74, one large group of those buildings is seen near the park at the left of the view. Another group is seen to the right of Washington Monument and a little beyond it. The work of Congress, of the Supreme Court, and of the executive departments helps to make our land "a good land in which to live."

Working for better farms. The Department of Agriculture does much more than care for the national forests and help farmers to save the soil (p. 98). Men in that department carry on experiments to find the crops best suited to different kinds of land.

They discover new crops and ways of improving farming and ranching. Both books and agents are sent out by the department to tell how to use farm and ranch lands well.

Many boys and girls who live on farms belong to clubs in which they learn about these good farm methods. By farming well, they can help all the people of our country.

Weather, of course, has much to do with farming, and in the Department of Agriculture is the United States Weather Bureau. Predicting the weather has saved millions of dollars for farmers, ranchmen, and other people of the United States.

Thousands of workers. Many thousands of men and women are needed to help in the work of the different departments. Some of this work is done to help our trade. Some of it is done to help people who travel in other lands, or men and women who work in mines or factories, or immigrants who come to make new homes in our country, or other such groups of people.

All the post offices of our country and the carrying of the mail are under the direction of the Post Office Department. The printing of the paper money we use and the coining of other money is directed by the Treasury Department.

Many people are needed to carry on the work of managing the national parks. Others help in directing irrigation projects and improvements in rivers and harbors. Many others are needed for such work as mapping our coastal waters, managing our fisheries, and learning more about our mineral resources and how to make the best use of them.

It costs a great amount of money, of course, to carry on all this helpful work. By paying taxes into the United States Treasury, each one of millions of Americans helps with the work in our great capital.

A growing city. Even if no one lived in Washington except government workers and their families, the city would be large. Of course, there also are, as in all cities, schools,

stores, hotels, and the like. So there is much other work, too. About three-fourths of a million people now live there.

When the place for our national capital was chosen about 150 years ago, New Hampshire was the northernmost state and Georgia was the southernmost. The District of Columbia is about halfway between them.

Washington was carefully planned. Park-like spaces have been left between many of the great buildings. Besides north-south and east-west streets, broad avenues *named for states* run in many directions from the Capitol grounds, somewhat like the spokes of a wheel. Statues stand in some of the circles at places where several streets meet. There are lovely drives along the Potomac and in the park along Rock Creek in the north-western part of the city.

The city has grown and changed as our country has grown and changed. Government work in our national capital and the other work of people of the United States will always go on together, for each depends on the other.

Things to Remember about our Country

1. *Washington, D. C. is our national capital.* What is a capital? What does D. C. mean?
2. *In our capital are many famous buildings.* Name three of them and tell how each is used.
3. *Many kinds of government work help to make our land a good land in which to live.* Name several of them, and tell how each helps.
4. *Our capital has grown and changed as our country has grown and changed.* Tell why.

Exploring and Finding for Ourselves

1. Make a sketch map of the part of Washington shown in Figure 74. Plan a route you might follow in going about there to see the things mentioned in this chapter.
2. Find (Fig. 7) about how far and in what direction Washington is from your home.
3. What do these words mean? Legislative work. Judicial work. Our chief executive. Our national Capitol. Our national capital.

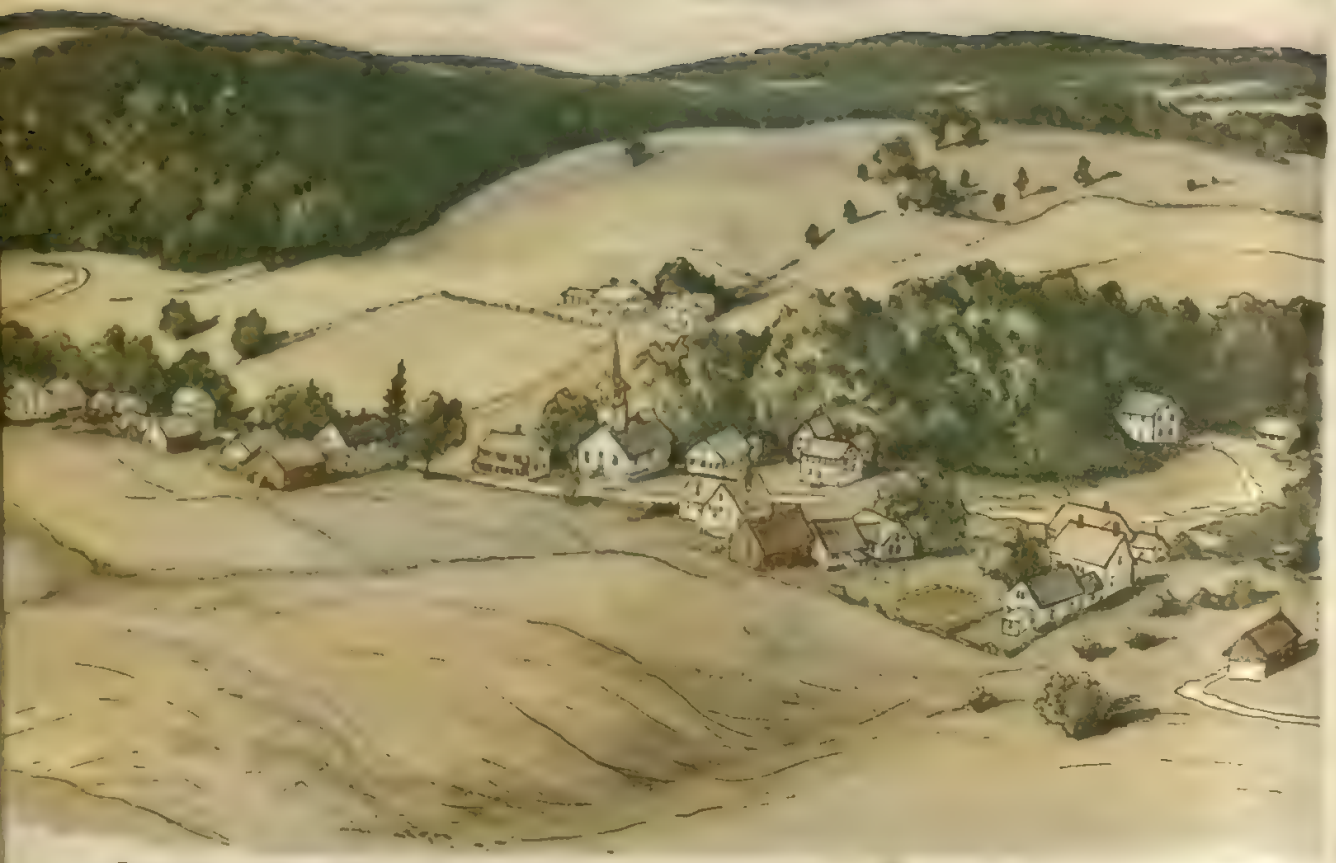


Figure 76. A farm village in Vermont

Northeastern United States

Many Villages, Cities, and People

Great changes. The farm village in the picture is in hilly New England. Today, as in early days, the hills and valleys of New England are lovely at every time of year. Snow still falls on them each winter. Such things do not change. But many things have changed greatly since early days.

The farmers who live in this inland village do not have hardships like those of inland farmers in early New England (pp. 15-16). There now are many good roads and great numbers of pleasant inland farms and villages in all the New England states (p. 10). Today,

most people in New England do not depend chiefly on the sea for a living.

In the Northeast there are not only the six New England states but also the six Middle Eastern States. Each state that is wholly shown on the map in Figure 77 is in Northeastern United States. Ocean ships come to all of the 12 northeastern states except Vermont and West Virginia. Changes since early days have been as great in the Middle Eastern States as in New England.

Many cities. The Northeast is the part of the United States that has most cities. The whole country is about 15 times as large as the Northeast (Fig. 7). Yet in all 48 states

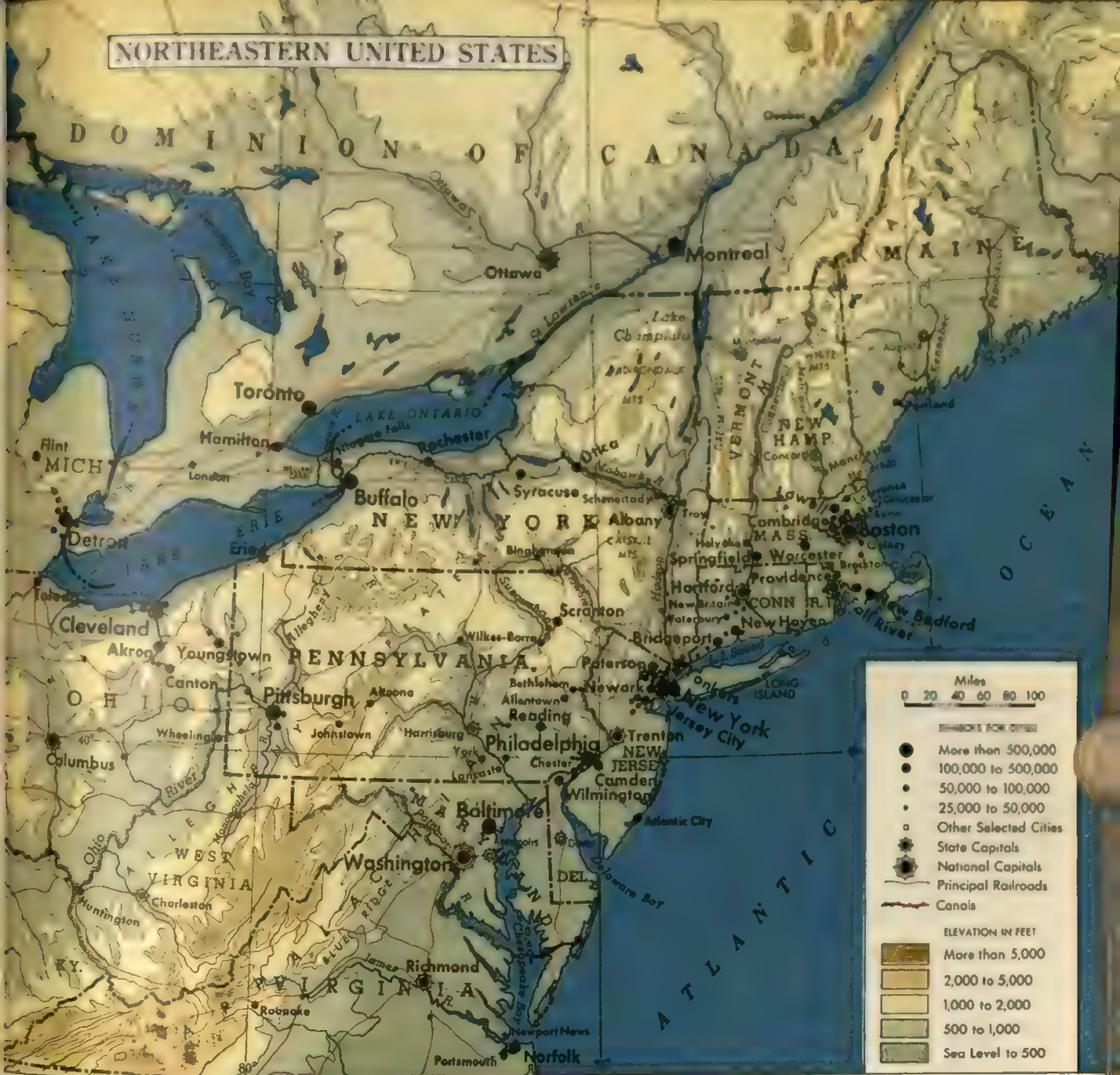


Figure 77.

there are only about three times as many large cities as there are in Northeastern United States.

As the map in Figure 77 shows, many of the cities of New England and the Middle Eastern States are in the lowland between Boston and Washington, D. C.

Some cities of Northeastern United States are on the coast but there also are many in-

land cities. Some of the cities have grown from early mill towns built at river falls. To all the cities, railroads bring things needed in mills and factories.

Railroads and a giant city. Many railroads in the Northeast follow river valleys (Fig. 77). Along the northeastern boundary of Pennsylvania, the Delaware River has cut a deep valley in the highland. The freight



Figure 78. A deep valley in the Appalachian Barrier

© Ewing Galloway

train in the picture in Figure 78 is carrying its heavy load over the railroad which runs through this valley. It is easy to see why the tracks were laid close to the river at the place shown in the picture. This railroad is one of the routes by which people now cross what was once "a great mountain barrier."

After the Delaware River leaves its deep, narrow valley in the highland, it flows southward across the lowland to Delaware Bay. It forms the boundary between Pennsylvania and New Jersey.

The giant city of Philadelphia and several smaller cities have grown up along the lower Delaware River. The map suggests one reason why Philadelphia is the largest city on the river. This reason is that at Philadelphia railroads from several valleys in the highland meet the shortest railroad route from New York to Baltimore.

Men could have made these railroads meet at some place on the river besides Philadelphia. But Philadelphia was the best place.

Ocean ships can come that far up the Delaware River. Farther upstream, the river is too shallow for them. At Philadelphia, then, railroad trains meet ocean ships as far up the Delaware as such ships can go.

Seeing Philadelphia. Figure 79 is an air view across part of Philadelphia and the Delaware River to New Jersey. The central part of this great trading and manufacturing city does not look much like the center of Washington, D. C. The huge office buildings do look much like those in New York (p. 3). Thousands of people are needed for the work done in the stores, hotels, and offices in these huge skyscrapers.

The most famous building in Philadelphia is Independence Hall. It is a small but beautiful building in the old part of the city. In Figure 79, it is hidden by the group of tall buildings nearest the river, to the right of the bridge.

This famous building is called Independence Hall because there, in 1776, a Congress



Figure 79. Philadelphia from the air

© Farchild Aerial Surveys, Inc.

of the colonies adopted the Declaration of Independence which Americans celebrate every Fourth of July. In buildings connected with the central hall, the Congress and Supreme Court of the United States met in the years from 1790 to 1800. Independence Hall is now a national museum. Many people visit it to see where the early work of our national government was carried on.

Along the river bank in Figure 79 are some of the piers at which ocean ships dock. Many of the buildings near the piers are warehouses. Farther downstream, in the southern part of the city, there are many more piers and warehouses and many large mills and factories. There also are piers along the lower part of a tributary of the Delaware. Of course, it takes a great many people to handle the freight at all the piers and in all the warehouses. A great many workers are needed, too, in the mills and factories.

Miles and miles of streets in Philadelphia are lined with the houses and apartment

buildings in which the people live. Some of the more beautiful streets, homes, and public buildings are north or northwest of the central business district shown in the picture. Much of the northern part of the city is hilly and not so crowded as the southern part.

Many millions of people. Because of its great trade and its great manufactures, Philadelphia has become the second largest city in Northeastern United States. There are about two million people in Philadelphia. New York City is much larger. There also are hundreds of other cities, large and small, in Northeastern United States. It is clear, then, that many millions of city people live in this part of the country. There also are millions of people outside the cities. About forty million people, almost a third of the people in the whole country, now live in the 12 states of the Northeast.

Great crowds of workmen are to be seen at the beginning or end of a day's work in large manufacturing plants in some of the



Figure 80. Ship builders at Baltimore

Arthur Siegel



cities. The picture above was taken at a shipyard in Baltimore.

In the circle on this page, there are 2000 people, about four times as many as in Figure 80. If there were room on the map in Figure 81, each tiny dot on it would be a circle like this one. Each dot on the map, then, means 2000 people. Some parts of the Northeast are settled so thickly that the dots form black spots on the map.

Work and fast travel. Figure 82 shows part of an excellent new highway in Pennsylvania. Many places that have no railroad or air line are on good roads. Fast travel helps to explain how forty million people can make a living in the Northeast.

DISTRIBUTION OF POPULATION IN THE UNITED STATES 1940

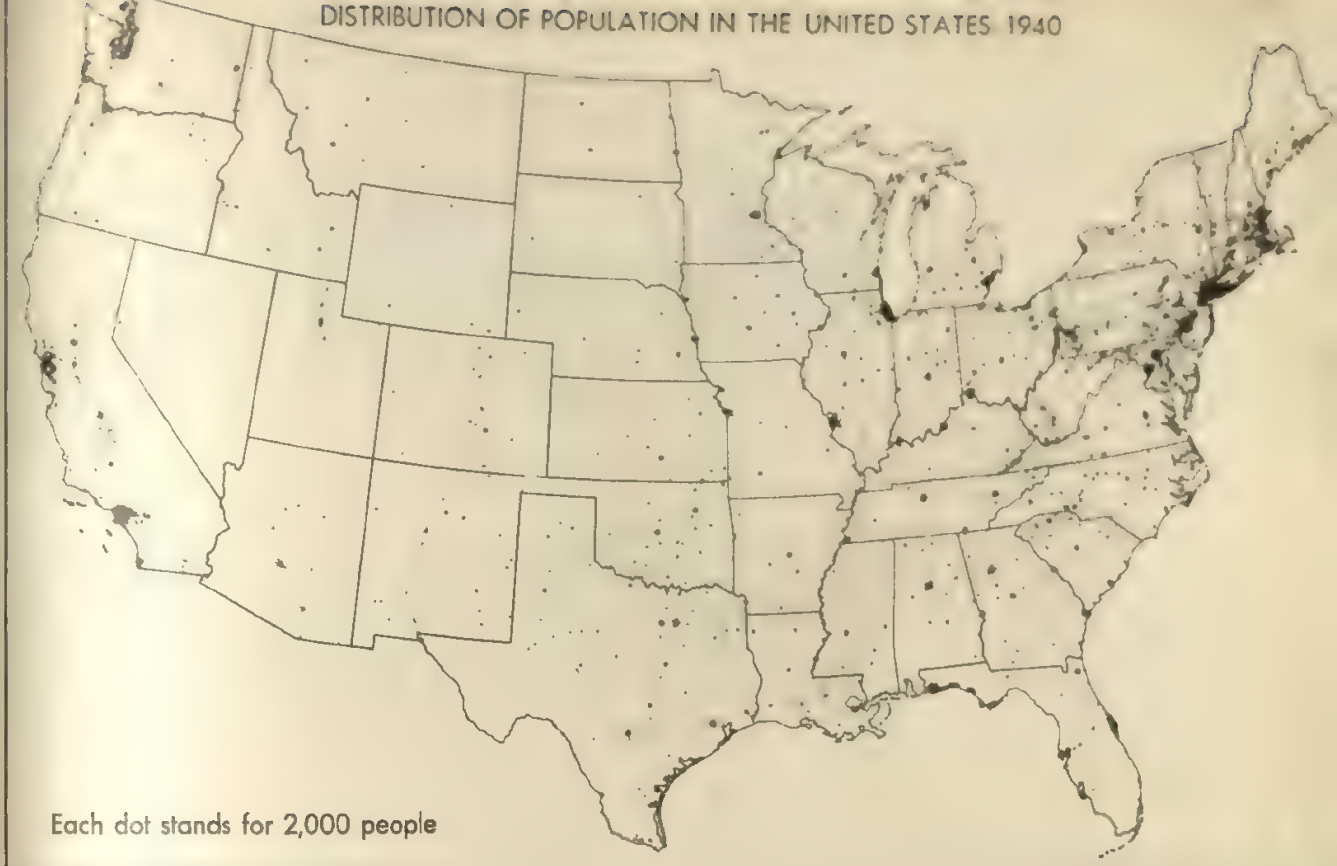


Figure 81. Where the people live

Bureau of the Census

Figure 82. The Pennsylvania Turnpike, a famous highway

© R. I. Nesmith and Associates



Roads, railroads, and air lines help cities to grow. The more people there are in cities, the more need there is for things produced by farmers, fishermen, miners, and other workers. As the cities have grown, the number of workers outside the cities has grown, too. Even so, most of the millions of people in Northeastern United States live in cities and depend on trade and manufacturing.

From Farm, Forest, Sea, and Mine to City

A special kind of farming. The farm in the picture in Figure 83 is in Massachusetts. It is one of thousands of dairy farms to be seen in Northeastern United States. When the weather is cold, the cows are kept in the barn instead of in the pasture. This small farm is on a good automobile road and the milk which the farmer sells gets to market quickly. When city milkmen deliver it to city homes, it is still good sweet milk.

Dairy farmers use much land for pastures and for fields in which they raise hay and other crops to feed to their cows. The Vermont farmer in Figure 84 not only raises much hay but also grows corn for fodder. In the picture, the farmer and his son are loading a wagon with corn fodder for their cows.

On many dairy farms there are both a big hay barn and a silo. The silo in Figure 85 is on a farm in Pennsylvania. Green feed, such as chopped-up green corn stalks and leaves, is packed in the silo to preserve it for later use. Feed which has been stored in a silo is called silage. In winter, it helps to take the place of the green grass cattle eat in summer pastures.

Busy days. Every day, there is much to do on a dairy farm. Cows are milked morning and evening. When kept in the barn, they must be fed. If they are out on pasture, they must be driven to and from the place where they are milked. The cows, the milking barn or shed, the milk pails, and the cans in which milk is sent to market must all be kept clean.

Fortunately, there is not as much plowing and planting to be done on dairy farms as on grain farms. Though many dairy farmers raise some corn for fodder or silage, the chief crop on most dairy farms in the Northeast is hay. The clover and grasses used there for hay are not killed during the winter.

Things to Remember about our Country

1. *In Northeastern United States there are 12 states. Name the six New England states. Name the six Middle Eastern States. The United States is about how many times as large as Northeastern United States?*

2. *About a third of all the large cities and a third of all the people in the whole country are in Northeastern United States. Most people there depend for their living on manufacturing, trade, or transportation work.*

In what part of the lowland along the Atlantic coast are there the most cities? Name two cities in that belt which have more than 1,000,000 people (Fig. 7).

Give two reasons why many cities in Northeastern United States are in river valleys. What helped Philadelphia to grow so large?

Exploring and Finding for Ourselves

Going to see. Using the map (Fig. 77), find the New England state in which there are most cities of more than 100,000 people.

Find three states you might visit in New England that have no city in which there are as many as 100,000 people.

Seeing for yourself. 1. What changes in Northeastern United States can you discover by looking again at the pictures on pages 11 to 24 and then at those on pages 104 to 130?

2. All three pictures on the next page were taken on farms of the same kind. The people on those farms sell something that city people want every day. It spoils quickly. Tell what you think those farmers sell.

3. How do good roads help farmers such as those in the village in Figure 76?



Figure 83. On a farm in Massachusetts

© James Sawders

Figure 84. On a farm in Vermont

Jack Delano



Figure 85. On a farm in Pennsylvania

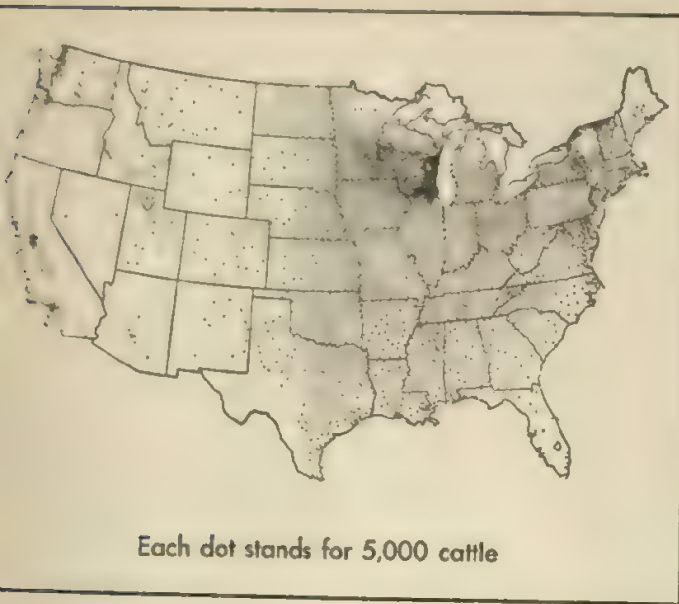
© Ewing Galloway





Figure 86. Haying on a farm in Connecticut

© Russell S. Anderson



United States Department of Agriculture

Figure 87. Distribution of dairy cattle



These crops can be raised without sowing seed every year.

On many dairy farms, haying time is the busiest time of the year. The picture above was taken late in June on a farm in Connecticut. Haying begins at that time in most of the lowlands in Northeastern United States. In Maine and in most of the higher lands,

such a picture could not be taken till some time in July.

Of course, it does not take so long to harvest hay now as it did before mowing machines were invented. Some farmers, like the one in the picture, use horses to pull their mowers. Tractors are used by others. Some farmers also have machines which rake the

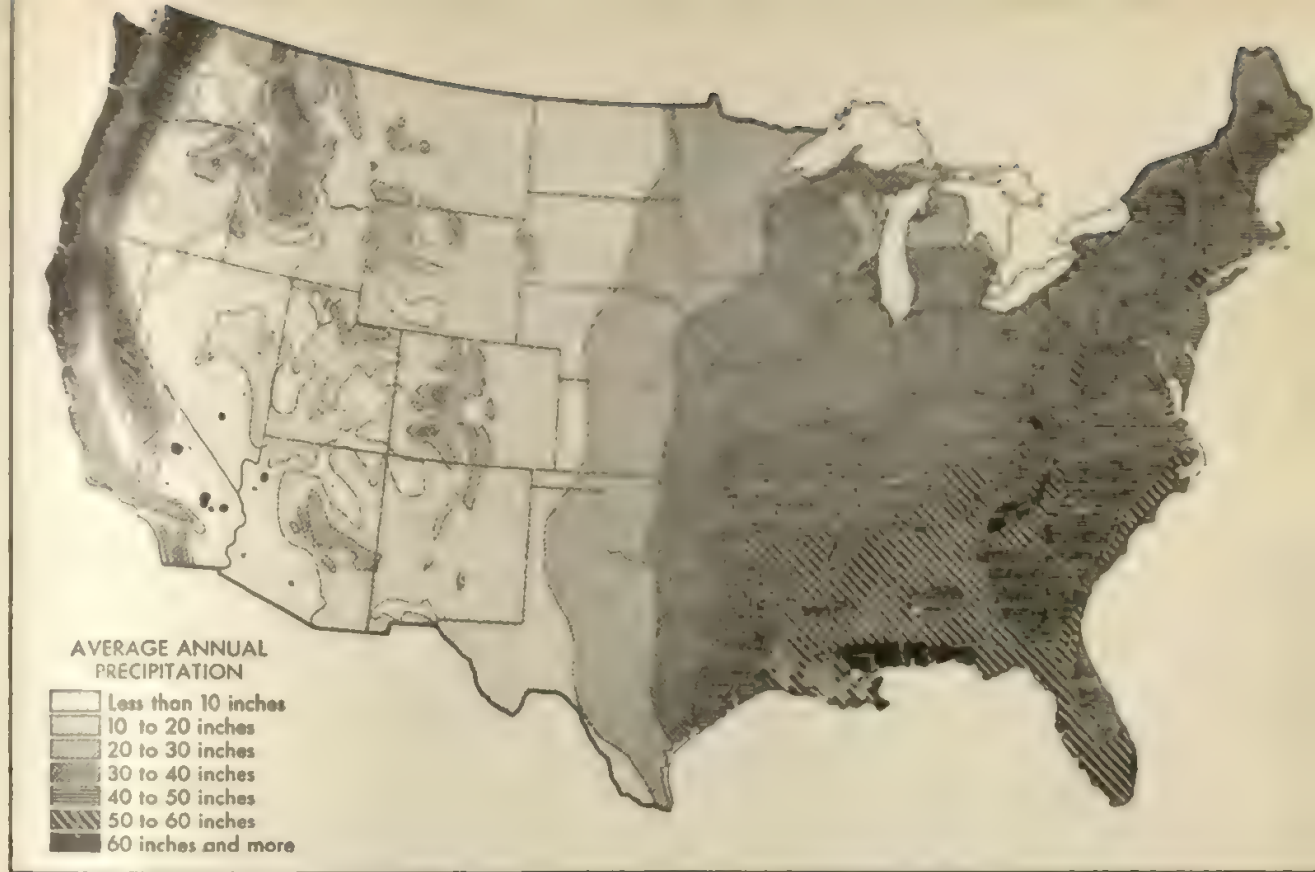


Figure 88. Distribution of precipitation

United States Department of Agriculture

hay, when it is dry enough to be stored, and bind it into bales.

The story of a great change. Each tiny dot in Figure 87 would be a circle like the one on page 112 if the map were large enough. Each dot means 5000 dairy cows, for there are that many cows in the circle. And of course each dot for many dairy cows also suggests many hayfields. No wonder Northeastern United States is often called a land of dairy farms! Those farms take up much more room than the cities.

Before people settled in the West, grains were the chief crops which eastern farmers raised to sell. Settlers in the West found lands in the Ohio Valley and other places that were better for grain crops than much of the land in eastern farms. As time went on, more and more grain from the West was sold in eastern cities at low prices. Hard times came to many eastern farmers. On some eastern farms it still pays to raise grain to sell. But many eastern farmers have had

to use their land for something else in order to make a good living from it.

Much land in Northeastern United States is better suited for hay than for any other crop. Some land there is not suited for any other crop. Hay can be raised in many kinds of places. On hillsides, hayfields help to prevent soil erosion. If hay has plenty of moisture, it can stand either cool summers or warm summers. The map in Figure 88 shows that all parts of Northeastern United States have much *precipitation*, as both rain and snow are called.

More and more milk was needed as the cities of the Northeast grew larger and larger. Since milk spoils quickly, nearness to cities was a big advantage for dairy farming. With faster travel and fast-growing cities, more and more farmers in the Northeast turned to dairy farming.

Green food for city people. Green vegetables and fresh fruit, like milk, help to keep people healthy. And, like milk, they spoil



Figure 89. A famous market

© Ewing Galloway

quickly. Some people in cities have gardens, but millions of them buy vegetables and fruit at grocery stores, fruit stands, and the like.

City grocers do not raise the vegetables they sell. They get most of them from big central markets called wholesale produce markets. Wholesale means in large amounts. Produce means vegetables, fruit, poultry, and other such foods. Wholesale food merchants buy produce raised on a great many scattered farms and sell it to grocers and others who, in turn, sell the produce to people who use it in their homes. If wholesale food merchants did not bring produce from many farms together in wholesale markets, most grocers could not get the large amounts of produce they need just when they need it.

A famous market. More than 200 years ago, a wealthy Boston merchant named Peter Faneuil decided that Boston needed a large central market. He had one built.

When it was finished, he gave it to the town. It was a large brick building so pleasing to look at that people spoke of it as "an ornament to the town." They named it Faneuil Hall.

The market was in the first story of the building. The second story was used for a town hall, just as in the Town House that had been built many years before (p. 17). Some of the meetings held in Faneuil Hall made it famous. Today many people come from near and far to see it.

By 1826, Boston had grown so large that there was not enough room in that hall for the market. Near it a huge new market house, called Faneuil Hall Market, was built. It is the very large building in Figure 89. In this picture Faneuil Hall is seen between the skyscraper in the distance and the big market house.

Many different produce companies have booths in this huge market, which now has

been used for about 120 years. Some of the big trucks in the picture are bringing crates or baskets of vegetables and fruits to be sold in the market. Others are trucks that grocers have sent to get fresh supplies for their stores. On every week day, the market is a busy, noisy place.

Raising truck to sell. A farm used chiefly for growing green vegetables for sale is called a truck farm. As more and more vegetables were needed in the cities, more and more farmers used land *near the cities* for raising truck. Today, besides general farms and the dairy farms in Northeastern United States, there are thousands of farms used for raising green vegetables or potatoes to sell.

Truck farms do not take as much room as the dairy farms or grain farms. It takes more work to use an acre of land for raising truck than for raising hay. And a farmer needs less land to make a living by raising vegetables than he needs for dairying or growing grain. Much land suited to hay and pasture is not good land for truck. Most of the truck farms are on land which has good soil and is almost level.

Vegetable views. Figure 90 shows one of thousands of fields of vegetables to be seen near cities of the Northeast. There are great numbers of truck farms in the lowland along the coast. Many are in New Jersey, in Delaware, and near Chesapeake Bay in Pennsylvania and Maryland. Much truck farming also is done in southern New England, on Long Island, and in western New York near Lake Ontario.

More than a third of all the land in the truck farms is used for sweet corn, tomatoes, and peas. A great many other kinds of vegetables are grown, too.

The picture in Figure 91 was taken about September 1. It shows men harvesting potatoes on a farm near the northeastern corner of Maine. This farm is not near any large city. Potatoes can be kept several months without spoiling, and they can be sent long



Figure 90. On a truck farm

© Ewing Galloway



Figure 91. Harvesting potatoes

© Ewing Galloway



Courtesy New York, New Haven and Hartford Railroad Company
Figure 92. Gathering cranberries

distances to market without being harmed.

In central New Jersey the potato harvest begins early in July. In the southern part of the peninsula east of Chesapeake Bay, farmers begin digging potatoes in early June.

Differences from place to place in farm work and farm crops depend on many things. One of them is distance from the equator. Others are rainfall, soil, and the slope of the land. Still others are the lengths of the trips between farms and city markets.

For the table. Farmers of almost every kind raise chickens for their own use and have a few chickens and eggs to sell. Many

farms near cities are used entirely for raising poultry. Of course, many of the poultry farms are in the lowland between Washington and Boston. Most of them are chicken and egg farms, but there are duck farms and turkey farms, too.

More than a third of all the ducks raised in the United States are raised on Long Island. Most of the other ducks for eastern markets come from duck farms in southeastern New England or near Philadelphia. The turkey farms are more widely scattered.

Fruits for the table, as well as fowls, are raised on northeastern farms. Northeastern United States is famous for its apples and its cranberries. Most farmers everywhere in the Northeast have at least a few apple trees. Some of them have large commercial apple orchards. Unlike apples, cranberries cannot be grown on most farms. These berries grow only in bogs or marshes. Cranberry bogs are to be seen in central New Jersey and on Cape Cod Peninsula, in Massachusetts.

Fruit-picking scenes. The picture on this page was taken at harvest time in a cranberry bog. Each autumn there are many scenes like this in areas where cranberries are grown.

The ground in a cranberry bog is covered by a thick mat of tangled vines, for cranberry plants have long runners that spread out in all directions. To gather the berries, pickers use scoops which are somewhat like boxes with wooden teeth along one edge. Shoving such a scoop time after time into the tangled vines is not easy work.

Fruit farms of other kinds may be seen in many truck-farming districts. It is interesting to visit the peninsula east of Chesapeake Bay when peaches are ripe, or when pickers are at work in fields of strawberries or of melons. Roads along the southern shores of Lake Erie and Lake Ontario are bordered by many vineyards as well as by orchards and berry fields. Fresh fruits of many kinds come to markets in the cities from the fruit farms of the Northeast.

Tobacco farms. It would take a long time to see all the kinds of work done by farmers in Northeastern United States. In Maryland, there are fields of tobacco and big tobacco barns on many farms. Tobacco was raised long ago in the lowland west of Chesapeake Bay (pp. 25-28).

Tobacco also is grown on many farms along the Connecticut River in southern Massachusetts and northern Connecticut. On these farms, there are soils good for growing tobacco to be used in the outside layers of cigars. Much of this tobacco is grown in the shade of strips of cotton cloth stretched between poles set in the tobacco fields: Harvesting this tobacco is somewhat like picking tomatoes, for the leaves are picked one at a time as they reach just the right stage.

Farm woodlands. There are woodlands on many farms in Northeastern United States and some of the work on such farms is woodland work. In winter, the Vermont farmer in Figure 93 cuts some logs from his woodland to sell to a lumber company. Firewood is cut from farm woodlands to fill the big woodsheds which are built next to many New England houses.

Sugar maple trees grow in many woods of the Northeast. Many farmers tap such trees for their sap. The sap is boiled to make maple syrup and maple sugar.

Work in the forests. Much work still goes on in the forests of Northeastern United States. Great numbers of logs are cut for wood to be ground into pulp for use in paper mills. In December, carloads of evergreen trees are shipped from Maine to be used in thousands of homes for Christmas trees. As in early days, some men work on their farms in summer and work as lumbermen in winter.

Farmers who fish. Some farmers, like the one in Figure 94, make a living partly by fishing. This farmer lives on the rocky coast of Maine. He does lobster fishing as well as farming. In the picture he is at work with one of his lobster traps.



Mason Post Wolcott

Figure 93. Logs from a farm woodland



© Frederic Lewis

Figure 94. Fishing for lobsters

The fisherman-farmer in the picture has a good garden, a potato patch, a few apple trees, a small pasture, a little hayfield, and much woodland. He keeps two cows and a flock of chickens. In his woodland, he cuts firewood and picks wild blueberries. His wife cans berries and vegetables for use in the winter.

Though this farmer gets from his land only enough for the family, he catches enough lobsters to have some to sell. In spite of long, cold winters he has a cozy home and

a good living. Many other farmers make part of their living by fishing.

Fishing near the shore. In many shallow places near the coast of Northeastern United States, shellfish such as lobsters and oysters are found. Much oyster fishing, like lobster fishing, is carried on in small boats. But oysters and lobsters are so different that ways of fishing for them are different, too. Oysters cannot walk into traps as lobsters can. When oysters are about two weeks old, they fasten themselves to pebbles or other objects on the floor of the sea and stay fastened there.

The man in Figure 95 is fishing for oysters. With tongs of the kind he is using, fishermen pull oysters loose and lift them into their boats.

Some oyster fishing is carried on in large boats in which there are dredges. The shovel

of a dredge scoops up a great many oysters at a time.

Any place where oysters live in great numbers is called an oyster bed. The fisherman in the picture is working near the coast of Maryland, over one of the oyster beds for which Chesapeake Bay is famous.

In almost every coast town from Maryland to Maine, some men are fishermen. Lobsters, oysters, and other shellfish make up a large part of the catch of the fishermen who work near the shore. In early days, such fishing was not a very important part of the fishing industry. Today, it is. The fishing industry, like farming, has changed.

Fresh fish for many inland markets. The great fish trade of early New England (p. 12) was almost wholly trade in dried fish or salted fish. In those days, only people very near the coast could have fresh fish from the sea. Today, fresh fish can be frozen, or packed in ice, and shipped in refrigerator cars to many inland cities. There still is much trade in dried and salted fish, but now there is also much trade in shellfish and other fresh fish.

Two fish visits. Massachusetts has by far the largest fishing industry in the Northeast. The chief centers of the industry in that state are Boston and Gloucester, a port near Cape Ann. Portland, Maine, is also a great fishing center (Fig. 77).

Visitors go to Gloucester to see the wharves where fish are spread out on many long platforms to dry. They may see there, too, fishing boats that go out to the Grand Banks, as in early times, or to other nearer banks.

To see a great fresh-fish market, many people visit the famous pier shown in the air view in Figure 96. It is in Boston harbor and is called the Fish Pier. The fish market on this pier is as busy and noisy as Faneuil Hall Market.

Fishing boats of many sizes and kinds crowd alongside this huge pier. Painted on their sides are such names as *Adventure*, *Mary Ann*, *Kittiwake*, *Shamrock*, and *Wil-*

Figure 95. Fishing for oysters

Reginald Hotchkiss



liam J. O'Brien. Gaily colored little carts stand here and there along the edge of the pier to be filled with fish tossed into them from the boats. When a cart is filled, it is pulled by one of the workers on the pier into the huge market building. After the fish are sorted and weighed, they are stored till they are sold. They are kept cold so they will not spoil. The many men who work on this famous pier make it possible for many American families, even if they live far from the coast, to have fresh fish from the sea.

Below the surface. The chief minerals of the Northeast are coal, oil, and natural gas. They are found chiefly in Pennsylvania and West Virginia.

Some coal is so near the surface that it can be uncovered by using steam shovels to

strip off the material above it. Coal mining which is done on the surface is called strip mining. Most coal, however, is too far below the ground to be reached in this way.

Wherever coal is found underground, it is in layers between layers of rock of other kinds. In some places streams have cut valleys through coal layers, and tunnels are dug into the coal from the valley sides. In most places, however, men must dig shafts somewhat like big deep wells down to the coal layers. From each shaft they then dig tunnels into the coal.

Miners load the coal they loosen from the walls of the tunnels into little cars. In these cars it is hauled to the mouths of the tunnels. In shaft mines, elevators in the shafts lift the coal to the surface.

[119]

Figure 96. Boston Fish Pier

Courtesy Massachusetts Fisheries Association © Fairchild Aerial Surveys, Inc.

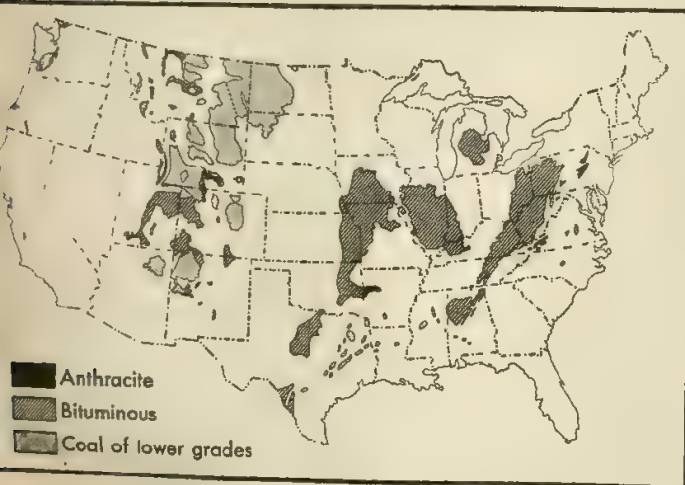




Figure 97. A coal-mining village in West Virginia

Marion Post Wolcott

Figure 98. Distribution of coal fields



In a coal-mining village. The mining village in Figure 97 is in a valley in West Virginia. The tall building in the picture is called a tippie. In a tippie, coal is sorted into lumps of about the same size, and large pieces are broken up. About half of the railroad cars in the picture had been filled at the tippie with coal that had been sorted. Others were waiting to be filled. Not long after the picture was taken, all these cars were on their way to places where the coal was to be used.

Coal, heat, steam, and electricity. Since coal is a mineral that can be burned in fur-

naces, stoves, and fireplaces, it is used in cold weather to heat millions of homes and other buildings. It is used the year round to heat water in the boilers of engines which are run by steam.

Many trains are pulled by steam engines. Steamships were given that name because their engines are run by steam. Many machines in factories are run by steam power. Many other factory machines are run by electricity made by machines that are run by steam. Much electricity used for lights is made in that way. Huge amounts of coal are used every day in making heat, steam, and electricity.

For iron and steel. Huge amounts of coal also are used in making coke which is needed in the manufacture of iron. Coke is coal that has been heated in ovens to drive off some of the things it contained.

Rock in which there is iron is called iron ore. Coke and limestone need to be put with iron ore into the huge furnaces in which iron is melted out of the ore. In other furnaces, minerals of various kinds are melted together with iron to make steel.

Soft coal and hard coal. The coal mined at the village shown in the picture is bituminous coal, or soft coal. Bituminous coal is not really soft, but it is not so hard as anthracite, or hard coal. Anthracite is excellent fuel, but coke is made from bituminous coal.

As the map in Figure 98 shows, anthracite is found in two small parts of northeastern Pennsylvania. Bituminous coal is found in a large part of western Pennsylvania and in much of West Virginia. About a fifth of all the men at work in West Virginia are coal miners. The coal mined in Pennsylvania and West Virginia is worth more than all the coal mined in the rest of the United States.

Since coal is found in few parts of the Northeast and is needed in all parts, carrying coal makes much work for railroads to do. Some of the railroads have been built chiefly to carry coal.

Wells and quarries. Petroleum and natural gas in the Northeast are found chiefly in and near the bituminous coal districts. Men do not dig mines to get oil and gas. Instead, they dig oil wells and gas wells.

In the story of our national Capitol on page 100, marble from two states was mentioned. Vermont is famous for its granite and marble quarries. In every state, there are open pits, or quarries, in which men are digging sand or gravel or cutting stone to be used in buildings.

Helpful changes. Huge amounts of mineral fuels are burned every day. As more and more of the underground supply of mineral fuels has been used up, men have tried more and more to prevent wasteful ways of mining and using them (p. 99).

Of course, it pays better to mine thick layers of good coal than to mine thin layers or layers of poor coal. If only the best layers are worked, it is very hard later to work the poorer ones. The poorer layers as well as the better ones now are mined in many places. Sometimes gases in mines have caused explosions and fires. Such fires have burned much coal underground. Better ventilation in mines and greater care on the part of miners are helping to prevent such loss. Many such changes are helping to bring about wiser use of coal and other minerals.

Fitting things together. Many places in the lowland along the coast of the Northeast were good places for cities. At all those places, roads and railroads could meet. There also were good places for cities in valleys. But cities do not grow just because there are good places for them.

Suppose all farmers, like the Maine farmer in Figure 94, raised only enough for themselves. There would not be food for people in cities. Without the work of miners and lumbermen, there would not be materials for railroads, trains, trucks, and ships. If there were no surplus, or extra, products from farms, forests, sea, and mines, there could

be no trade. Without trade, there would be no factories. Clearly, if no work were done outside cities, there could be no cities.

A big difference. A farmer who raises more than he uses sells *products* such as apples or wheat or milk. Most workers in big markets, such as Faneuil Hall Market and the Fish Pier, work for produce companies for wages. They are paid for their *labor*.

The men who own grocery stores or wholesale produce markets neither raise products to sell nor work for wages. They buy products and sell them to their customers for more than they pay for them. They earn the profit they make by doing their customers a helpful *service*. They save customers the time and effort of going to farms for produce or the cost of paying farmers to bring in the produce.

Factory owners, like farmers, have products to sell. But most people who work in factories are paid wages for their labor.

It takes much room to raise farm products. It takes, in comparison, only a small space for city people to carry on the many kinds of work they do.

Depending on each other. The number of people who can make a living on farms, in forests, at sea, and in mines depends partly on what can be produced there. It also depends greatly on how much city people buy. Work outside cities changes as work inside cities changes. Each depends on the other.

Things to Remember about our Country

1. *Fast travel and the many cities in Northeastern United States help to explain why much land there is used for dairy farms.* Tell how. Why is much hay raised on the dairy farms?
2. *Farmers on several other kinds of farms send food for city people to wholesale produce markets.* Name three kinds of special farms from which produce is sent. Name districts in which there are many of these special farms. Why are so many needed in those districts?

3. *Much work still goes on in forests in the Northeast though most of the best timber has been cut.* Tell two things sent from the forests to city factories and homes.

4. *Things which brought about changes in farming also brought about changes in the fishing industry.* How has the fishing industry changed? What helped it to change?

5. *The mining of coal in Northeastern United States helps to explain many great changes that have taken place there.* Tell how. Where and how is coal mined there?

Exploring and Finding for Ourselves

1. The picture in Figure 99 was taken in a New York city of more than 500,000 people. It is on Lake Erie. Name the city (Fig. 77).
2. What kinds of farms could you see in western New York near this city?
3. Name five other cities of more than 500,000 people in Northeastern United States.
4. What do these words now mean to you?

anthracite	silage	bog
bituminous	tipple	silo
shaft mine	wholesale produce market	

In the Cities

Factories and factories. In Northeastern United States, more people make a living by manufacturing than by any other kind of work. Even in a single group of mills such as the mills in Figure 99, many workers are needed, and there are hundreds of kinds of mills and factories. Almost everything people buy in stores which sell clothing, furniture, hardware, and drugs is made in factories. This means that almost everything used in homes is made in factories.

Many foods are made ready in factories for sale in food stores. Fruits and vegetables are canned in factories. Tea, coffee, and sugar are prepared in factories for sale to grocers. Food stores get pork, beef, and other meats from meat-packing plants.

Helping one another. All factories depend partly on other factories or mills, as well as on trade and transportation. Cloth for flour



Figure 99. Flour mills and lake freighters

© Ewing Galloway

sacks used in the mill in Figure 99 is made in mills where cotton cloth is woven. Factories that make cans used in canning factories get materials from mills where sheets of metal coated with tin are made. Those mills use metals which are smelted from ores in other mills.

Wooden crates are made in box factories, and paper is made in paper mills. Wood for the boxes comes from mills where logs are sawed into lumber. Wood pulp for paper is made in pulp mills.

Machines of many kinds are made in machine factories, or shops. Those shops depend on iron and steel mills for materials. Even iron and steel mills depend on other mills, for coke used in making iron is made in coke mills. Without coal, iron, and steel, people could not have most of the things which they use every day.

A great flour-milling city. The scene in Figure 99 is in Buffalo, which is famous for its wheat elevators and its flour mills. This city is the chief flour-milling center in the country. Great amounts of wheat would come to Buffalo even if there were no flour mills in the city. Buffalo is the easternmost port on Lake Erie to which lake freighters bring wheat on its way from the West to cities on the Atlantic coast. Wheat unloaded from freighters at that port is stored to be sent eastward on canal barges and freight trains.

Coal from mines in West Virginia and Pennsylvania is sent by rail to Buffalo to be shipped westward on the Great Lakes. Niagara Falls are near-by (pp. 61-62). At Buffalo, then, wheat meets coal and electric power, as well as good routes of several kinds to many places. Such a place is a very good one for flour mills.



Figure 100. Textile mills and paper mills in Massachusetts

© Fairchild Aerial Surveys, Inc.

Figure 101. A close-up view of textile mills

Jack Delano



Weaving cloth. In every northeastern state except West Virginia, one of the leading kinds of factory work is weaving cotton, woolen, rayon, or other cloth. All woven materials are called textiles. One reason for the great number of textile mills is that everyone needs clothing.

Massachusetts has long been famous for its textiles. The air view in Figure 100 shows textile mills and paper mills in that state. Figure 101 is a ground view of some of the textile mills.

A textile story. More than 125 years ago, a Boston merchant named Lowell thought that power from some of the many waterfalls in New England might well be used in textile mills. He went to England to find how textile manufacturing was done.

At falls in the Merrimac River where Lowell, Massachusetts, now stands (Fig. 77),



Figure 102. A coke plant

C. R. I. Neimish and Associates

he built a big mill for making cotton cloth. He chose that place for several reasons. The falls there could furnish enough *power* for many mills. They were not far from Boston. To Boston, ships could bring cotton from the South. Cotton was the raw material needed. Many girls from near-by farms would come as mill workers. Since many routes met at Boston, cloth could be shipped from that city to many places. Power, raw material, workers, and markets are four things which men always need to think about in choosing places for mills and factories.

This mill succeeded. Other textile mills were built in Lowell. The city grew. For many years it was the chief cotton-textile city in the country. Textile mills were built at other falls. Some mill owners chose to make woolen cloth instead of cotton cloth. Wool from New England sheep was used, but soon that wool was not enough. Much wool was brought to Boston from other places. In time Boston became the chief wool market of the country. Big wool warehouses are now to be seen in the city, not far from the Fish Pier.

Today there are great numbers of textile mills in and near the lowland from south-

western Maine to the Potomac River. Such mills can now be run by steam power. Coal and the raw materials that are needed can be brought together in many places. The cost is no greater than the cost of taking the raw materials to water power. Many cotton mills have moved to the South, but millions of workers make their living in the textile mills of the Northeast. There are not only mills for making cotton goods and woolen goods, but also mills in which silk, rayon, and nylon are made. Rayon and nylon are rather recent inventions.

Light and heavy. All the mills in Figure 100 are several stories tall. Many kinds of factories look much like these mills. All kinds of manufacturing done in buildings of several stories are called *light* manufacturing.

Coke and other things made from coal are manufactured in the plant in Figure 102. To carry on the manufacturing work done in this plant, big ovens, tanks, and huge amounts of coal are used. All these heavy things need to be on the ground. All kinds of manufacturing in which huge furnaces, tanks, heavy machinery, and great amounts of fuel are needed are called *heavy* manufacturing. Making iron and steel is very heavy manufac-



Figure 103. Where iron and steel are made

turing. Some of the huge furnaces needed in iron and steel mills are shown in Figure 103.

Famous for iron and steel. Northeastern United States is as famous for its iron mills as for its textiles. This fame is chiefly due to the iron and steel mills of Pennsylvania.

Since the bituminous coal fields of the Northeast are in southwestern Pennsylvania and West Virginia, coal and coke can be had more cheaply there than in other parts of the Northeast. An enormous amount of fuel is used in iron and steel mills. It would cost a great deal to move the fuel long distances. So it is as sensible for men to do this heavy manufacturing near coal fields as it was for Mr. Lowell to build his textile mill near waterfalls.

Pittsburgh is the chief center in the Northeast for making iron and steel. At Pittsburgh several valley routes meet (p. 43). Many coal mines and coke mills are in or near valleys that lead to Pittsburgh. Railroads in the valleys and barges on the Monongahela River

move fuel to mills in the Pittsburgh district.

Iron ore used in these mills comes chiefly from mines in Minnesota. Lake freighters bring the ore to ports on Lake Erie. At Pittsburgh, routes from Lake Erie ports meet routes from coal fields near that city. So Pittsburgh is a good meeting place for iron ore and fuel. Pittsburgh is also a good place from which to send iron and steel to other parts of the country.

There are steel mills in southeastern Pennsylvania, not far from the eastern edge of the coal fields. Many workers in West Virginia and Maryland are in the iron and steel industry. Iron and steel are made at some places, such as Buffalo, where routes over which much coal is sent meet routes from iron mines. Pennsylvania, however, has far more workers in the iron and steel industry than any other state.

Near raw materials. A few kinds of factories need to be near places where raw materials used in them are produced. Since



Figure 104. The beach at Coney Island

strawberries, peas, and the like are not good travelers, places near fruit or truck farms are chosen for canning factories.

Nearly all the pulp mills in the Northeast are in or near forests in Maine, northern New York, and New Hampshire. There is no need to move the heavy pulpwood cut in the forests to places where it meets coal. Many waterfalls are near-by, and water power is used in the pulp mills.

Crowded cities. Most kinds of factories do not need to be either near coal fields or near places that produce the raw materials. Water power or steam power and raw materials of many kinds can be had in almost every large city. Nearly all small cities are good places for some kinds of manufacturing. In one way, it is unfortunate that cities are the best places for most manufacturing. Cities are much more crowded than they would be if they were not such good places for most factory work. And in crowded places, it is hard to get enough fresh air and sunshine.

Work and play. The people in Figure 104 have come to Coney Island, near New York, to get away from the city for a few hours. The beach is jammed with people from the city on almost every summer day.

Near the coast and in the mountains of the Northeast, there are many beautiful places where city people spend vacations. There are fine beaches and many hotels, for instance, at Atlantic City, on the New Jersey coast. In Maine, there is a national park where people may enjoy mountains, seacoast, and ocean. Many people in many places make a living by caring for visitors who come for rest and play.

In most cities. Though no city is exactly like any other city, all cities are much alike in some ways. In every city, as in Philadelphia, there is a main business district in which most of the large stores and office buildings are to be found. Such a district is either near the center of the city or in a place which can be reached easily from warehouses and from most homes. Goods sold in the stores come

from the warehouses. People who buy the goods come from the homes.

In almost every large city one or more wholesale trade districts and one or more factory districts are found along railroads. In ports, some of them are near wharves.

The homes of many people who work in warehouses and factories are near those working places. People who work in the business center do not need to live so near their work, for bus lines or car lines come to that district from all parts of the city.

Differences in cities. Cities, like farms, are of different shapes. In some cities, much land is hilly and many streets are winding. In cities which are on almost level land, many streets are straight.

Two different cities may have many of the same kinds of factories. But there may be shoe factories, for instance, in one city and glove factories in another, though it might have been the other way round.

Once a factory of a certain kind has succeeded well in any place, that place has advantages for other factories of the same kind. One advantage is that some people in that place have become skillful in that special kind of factory work.

Some cities or districts have become famous for certain products that have been made in them for a long time. Rhode Island has become famous for making jewelry as well as textiles. Early factories of those kinds were successful in the state, and those industries grew. There are many shoe factories and many paper mills in Massachusetts and New Hampshire. Connecticut is famous for small metal wares, such as firearms, clocks, and various kinds of hardware. In Delaware and New Jersey, many chemicals are manufactured.

In the large ports. Many raw materials that come to the Northeast from other lands come into Boston, New York, Philadelphia, and Baltimore. At these four ports much coal and manufactured iron and steel meet on their way to factories in many places. Many

kinds of light manufacturing are done in each of these ports. In or near each port, some heavy manufacturing goes on.

Big steel ships are built near Boston, and at Baltimore (Fig. 80). Locomotives are built near Philadelphia. Sugar brought into that port is refined in big mills there. Much oil is piped to Philadelphia and New York for shipment from those ports. There are oil refineries near both cities.

Seeing New York. The central business district of New York, with its tall skyscrapers, is on Manhattan Island. This long, narrow island is only about twice as wide as the Hudson River, which separates it from New Jersey. The island is separated from Long Island by a strait called East River. This strait is not as wide as the Hudson.

Figure 105 is a view across East River and the southern end of Manhattan Island. The western shore of the island is hidden from view by the tall buildings. To the north, beyond the right edge of the picture, there are many more skyscrapers. To the south, beyond the left edge of the picture, is Upper New York Bay, into which the Hudson River flows. The part of Manhattan Island shown in this view is shown on page 24 as it looked in early days. The bay is at the top of that drawing.

Even in the small part of the harbor shown in Figure 105, there are more than 10 large piers. In the picture, more than 50 boats are at or near these piers. Two of them are ocean ships. Some of the small boats are tugs. There are many barges.

The lower part of Hudson River is called North River. Both shores of North River are lined for several miles with piers. The largest ocean vessels afloat dock at North River piers. Besides the miles of large piers in the southern part of East River and North River, there are piers along the shores of the bay.

To and from Manhattan. New York has spread far beyond Manhattan Island. Two



Figure 105. The greatest American city, and the busiest American harbor

© Ewing Galloway

parts of the city, Brooklyn and Queens, are on Long Island. They are connected with Manhattan by several bridges over East River. There also are several bridges over Harlem River, the very narrow strait which separates the northern end of Manhattan Island from the mainland. On the mainland beyond the Harlem is a part of New York called the Bronx. Richmond, another part of the city, is on Staten Island, which is south of Manhattan Island.

The great George Washington Bridge connects the northern part of Manhattan Island with New Jersey. Farther south, no bridge crosses the wide Hudson River, but there are tunnels under the river. Ferryboats carry people across the Hudson.

Thousands of people who work on Manhattan do not live on that island. To reach Manhattan from their homes, they must go by ferry, ride through tunnels in trains or

automobiles, or ride or walk across bridges. All the routes into the island are crowded at hours when people go to or from their work.

A great center. The giant city of New York is the greatest transportation center, the greatest trade center, and the greatest manufacturing center in the New World. More ships come to New York harbor than to any other harbor in America. They come from many lands. More trains meet ships at this great port than at any other American seaport. Great numbers of planes fly to and from New York. Some of them fly between New York and Europe.

Almost a fifth of all the people in Northeastern United States live in New York City. There is no other such center of population in the American continents.

New York is famous for many things. The largest markets of many kinds are there. No other city in the world has so many tall sky-

scrapers. Many books and magazines are printed in New York, and there are great numbers of clothing factories in the city. Many other kinds of light manufacturing have helped to make the city great.

New York is much more than a huge work center. It is the greatest music center, the greatest theater center, and the greatest fashion center of the country. Thousands of people come to New York to hear great music, to go to theaters, to see treasures in museums, and to visit beautiful shops of many kinds.

Night and day. On some days, enough fruit and vegetables to fill a thousand freight cars come into New York City by truck and train. Goods of all the kinds that come into the city in a day would fill many thousand freight cars. New York and other cities of the Northeast depend on workers of many kinds in all parts of the country. All parts of the country depend on cities of the Northeast. People of the United States could not work together as they do if it were not for ships, airplanes, trains, and trucks. These carriers speed along with their loads all through the night and all through the day. They are moving links that help to bind together all parts of our huge country.

Things to Remember about our Country

1 *Most workers in cities in the Northeast make a living in mills and factories.*

Name at least 20 things that are made in mills or factories and that are used every day in American homes. Show that factories depend on one another.

2. *In choosing places for factories, men need to think about raw materials, power for running machines, workers, and markets.*

Keeping these four things in mind, give reasons for each of these three facts about cities in the Northeast. (1) Buffalo is the chief flour-milling city. (2) There are textile mills in many cities in most of the 12 states of the Northeast. (3) Pittsburgh is the chief center for making iron and steel.

3. *All large cities are much alike in several ways. Tell in what ways.*

What things about cities help to explain the need for places such as Atlantic City?

4. *The manufacturing done in one city may be different from the manufacturing in another city even if both cities are good places for factories of the same kinds. Tell why.*

5. *New York's harbor and location have helped that city to become the largest American city. Show how these things have helped New York to become a great center of many important kinds of work.*

Exploring and Finding for Ourselves

How does what is shown in Figure 78 help to explain what is shown in Figure 79? How does what is shown in Figures 79 and 105 help to explain what is shown in Figures 83, 90, and 91? See how many other pictures on pages 104-130 you can match together in such a way.



Southeastern United States

Eleven great states. The states in Southeastern United States are Arkansas, Louisiana, and the nine southern states east of the Mississippi River (Fig. 106).

As the map shows, Kentucky, Tennessee, and Arkansas are the only southeastern states that have no seacoast. The Mississippi River forms part of the boundary of each of these three inland states.

Florida borders both the Gulf of Mexico and the Atlantic Ocean. The coast of Florida is much longer than the coast of any other southeastern state.

There is more land in the five southern states that border the Atlantic coast than there is in the whole Northeast. Southeastern United States is much more than twice as large as Northeastern United States (Fig. 7).

[131]

Figure 106.

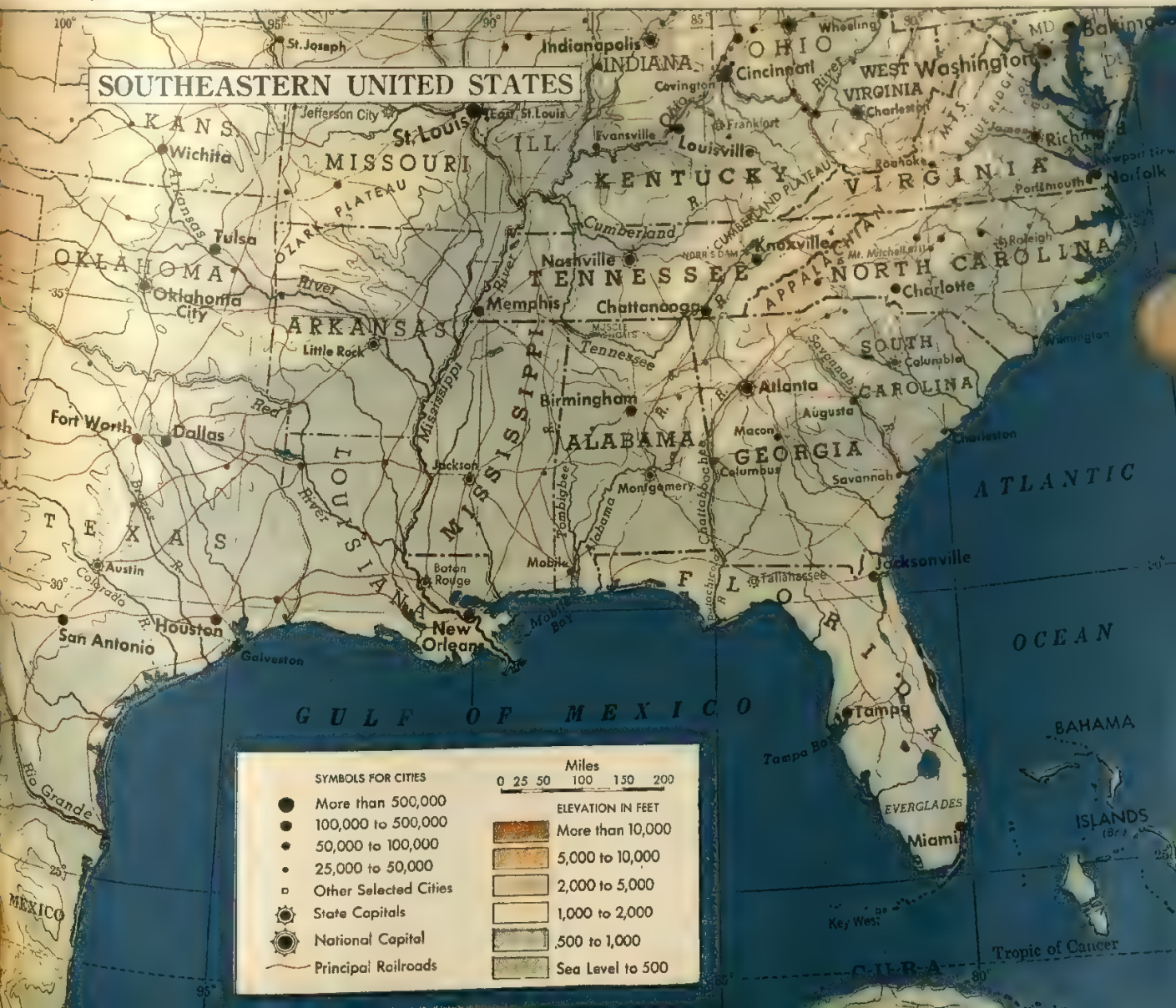




Figure 107. A plantation home in South Carolina

© Gendreau

Famous for farms. The pictures on pages 132-153 show some of the ways in which people in Southeastern United States are using farm lands, forests, minerals, water power, and other riches. Some things shown in the picture are rather new. The Southeast has become famous for recent changes such as the building of many new factories. Southeastern United States also is famous, as in early days, for its great number of farms and plantations. On many southern plantations, there are homes much like the South Carolina home in Figure 107.

In every southeastern state except Florida, most people live on farms and in villages. There are only about half as many large cities in the Southeast as there are in Northeastern United States.

Tobacco is a famous crop of the Southeast, as in early days. Most of the tobacco is grown in Kentucky, Tennessee, and the Atlantic coastal states. North Carolina is the leading tobacco-growing state in the country. Kentucky ranks second.

The most important crop of the Southeast is cotton. Nearly all the cotton is grown farther south than Virginia and Kentucky. More than three-fourths of all the farmers in most southeastern states use some of their land for raising cotton. More than a third of the cotton crop of the world is grown in Southeastern United States.

In the Southern Atlantic States

Crops and cities. North Carolina, South Carolina, and Georgia are among the great cotton states of the Southeast. People in Virginia and Florida depend chiefly on other crops. Differences in crops raised in two regions help to make work in cities in those regions different. Cities in the five southern Atlantic states show much about what is going on outside the cities.

The largest city. Atlanta, the capital of Georgia, is the largest city in these five states. This city is near the southern end of the Appalachian Mountains. For many miles northeast of Atlanta, there is no easy route by which railroads can cross these mountains. But from Atlanta a railroad runs northwest, across a narrow part of the highland, into a great valley called the Appalachian Valley. Part of this valley is in eastern Tennessee. Knoxville, Tennessee, is in the valley and Birmingham, Alabama, is near its southern end (Fig. 106).

Railroads from the Atlantic coast, the Gulf coast, the Piedmont, and the Appalachian Valley meet at Atlanta, somewhat as spokes in a wheel meet at the hub.

City and country. The northern part of the main business district of Atlanta is seen in Figure 108. The state capitol is near the southern edge of this district and does not



Figure .108. Atlanta from the air

© R. I. Nermith and Associates

show in the picture. This air view shows that much trade goes on in the city, for many tall business buildings mean a large trade center. Several main streets of Atlanta meet at a point called Five Points. This point is near the lower left corner of the picture, just beyond the large dark building. Since this point is the hub of Atlanta traffic, traffic policemen are kept busy at Five Points.

Some of the trees in the picture are magnolias and other trees that grow chiefly in the South. A spring festival is held in Atlanta when dogwood is in bloom.

One of the wide streets in the picture is Peachtree Street. Peaches are grown in most southeastern states, but more peaches are grown in Georgia than in any other state in the eastern half of the country.

Markets and mills in Atlanta show how city work and country work depend on each

other. Atlanta is an important market for cotton and for mules. Mules are used as work animals on many farms in the Southeast. Large amounts of fertilizer are made in Atlanta. Much fertilizer is used on farms in southeastern states because crops such as cotton take much richness from the soil.

There are mills in Atlanta for making cotton cloth, and other mills for making oil and meal from cotton seed. Raw materials from forests and mines of the Southeast are used in other Atlanta factories of many kinds. Railroads bring coal from mines not far away. The city gets electric power from the near-by Chattahoochee River. Atlanta depends on many parts of the Southeast.

A famous capital. The second largest city in the southern Atlantic states is Richmond, Virginia (Fig. 106). Unlike Atlanta, which is only about 100 years old, Richmond has



Figure 109. Shipyards at Norfolk, Virginia

been important since colonial days. The city grew from an early settlement on wooded hills at the lower falls of the James River.

The most famous of the old buildings in Richmond is the capitol, which was planned by Thomas Jefferson. There are noted monuments in the city. Many fine old brick homes stand along some of the tree-bordered streets.

Tall business buildings, big warehouses, and factories of many kinds show that Richmond is also a modern trade and manufacturing center. Railroads link this center with the coast, the Piedmont, the Appalachian Valley, and the Northeast.

As in Atlanta, work of many kinds is carried on in Richmond. The factory products for which Richmond is most famous are tobacco, cigars, and cigarettes. Thousands of people in the city work in tobacco factories and warehouses. Much tobacco is raised southwest of Richmond. In summer, Negro farmers sell

cartloads of other farm products, such as watermelons, corn, and sweet potatoes, in the Old Market district of the city.

A long coast with few ports. The Atlantic coast of the Southeast is hundreds of miles long. But south of Chesapeake Bay there are no harbors on this coast which are roomy enough for many large piers and deep enough for the largest ocean ships. Jacksonville, Florida, has grown large partly because it is the "railroad gateway to Florida," as well as a port. Charleston and Savannah are not very large ports, though they were founded long ago (p. 31).

Charleston. The port of Charleston is on a small peninsula between two small rivers. Along these rivers are the piers and factories of the city. The lovely old part of the city is near the coast between the rivers.

Many visitors go to Charleston to see its famous old homes, and to enjoy the ocean



Figure 110. On a beach at Miami, Florida

and the near-by countryside. Near the city there are fine old plantation houses in the midst of big old trees. Both city and countryside show much about the lives of people in early South Carolina.

As in Richmond, other things in and near Charleston are new. A noted bridge now crosses one of the rivers at Charleston. A large swamp not far from the city has been made into beautiful gardens called Cypress Gardens. People come from near and far to see them. In these Cypress Gardens, miles of flower beds border dark swamp waters in which many giant cypress trees grow.

Large fields of lettuce, cabbages, beans, and other truck are now to be seen near Charleston. After the coming of fast transportation, such vegetables could be shipped to northern markets. Of course, weather warm enough to make plants grow begins much earlier in South Carolina than in the Northeast. People in the North can have truck from southern farms many weeks earlier than from northern farms. Cabbages, for instance, are shipped from Charleston in early March.

Near the ends of the South Atlantic coast. Figure 109 shows a part of the harbor of Norfolk, Virginia, where big steel ships are made and repaired. The workers in the picture look tiny beside the airplane carrier and other ships in and near the docks. This scene is in the northernmost large city on the southern Atlantic coast (Fig. 106).

Figure 110 is a January scene on a palm-bordered beach at Miami, Florida. Miami is the southernmost large city in the United States. Norfolk is a big, busy port. Miami is a great winter resort, a city built as a place in which to play.

Norfolk. Large navy ships such as those in the picture are to be seen at Norfolk because there is an important naval station at this port. Norfolk is at the mouth of the James River near the southern end of Chesapeake Bay. This port is a good place from which to guard the entrance to this great bay and the cities on or near it.

The harbor of Norfolk is roomy, sheltered, and large enough for the largest ships. At Norfolk and Newport News, across the river,



Figure 111. Acres of celery

Courtesy Florida State Department of Agriculture

ocean ships meet railroads from West Virginia coal fields and from several steel-making districts. Huge amounts of coal are shipped from both these ports. At both ports a great many people work in shipbuilding plants. Huge amounts of tobacco, peanuts, grain and other farm products of the near-by region are also shipped through this great Virginia doorway.

A winter playground. Most land in Florida is low and almost level. In southern Florida, there are thousands of acres of treeless marsh called the Everglades. The Everglades are interesting. Alligators that live in the Everglades are interesting, too. But such marsh land is of almost no use to people unless it has been drained.

Miami stands on land which was once a marsh near the eastern edge of the Everglades. Sand from the bed of the bay near the city was used to fill in this marsh. Hotels and homes were built. Soon thousands of people came to enjoy winter sunshine and such sports as bathing and fishing. Miami is now an important way-station on a main air

route to Latin America, but the chief business of the city is the tourist business.

In most parts of Florida, as in Miami, many people make a living in the tourist business. The state often is called "a great winter playground."

Winter-grown vegetables. The huge field of celery in Figure 111 shows another way in which Florida's warm winter weather helps people to make a living. The machine in the picture is a fertilizer. Good methods and much care must be used to get from land such a good crop of celery or any other vegetable.

Millions of dollars worth of vegetables are grown in winter in many places near the coast north of Miami, near Tampa on the Gulf coast, and in north-central Florida. Celery, tomatoes, cabbage, early potatoes, and other winter-grown Florida vegetables can reach market earlier than vegetables from any other Atlantic coastal state.

The most famous Florida crop. Citrus fruit is Florida's most famous crop. Oranges, grapefruit, lemons, and other citrus fruit



Figure 112. At a cotton gin

Russell Lee

cannot stand frost. All the citrus fruit orchards of the Atlantic states are in Florida. Most of these orchards are in a belt across central Florida from the Gulf to the Atlantic. The best time to visit the state to see orange pickers at work in the lovely orange orchards is late autumn and early winter.

Two great changes. One great change in the Southeast has been the use of much land for raising truck. In lands near the coast of every southern Atlantic state, much early truck is now grown for sale.

Another great change has been the coming of many cotton mills to North Carolina, South Carolina, and Georgia. In Figure 112, wagons filled with cotton are waiting to be unloaded at a gin, where cotton fiber, or lint, is separated from the seeds. Figure 113 is a scene in a North Carolina mill.

In the machines in this picture cotton is being made ready for other machines in which the fibers will be twisted into threads. This mill is one in which the threads will then be made into material for use in automobile tires.

Figure 113. In a cotton mill

© Ewing Galloway





Figure 114. Textile mills in North Carolina

The belt of textile towns. Most of the cotton mills of North Carolina, South Carolina, and Georgia are in or near the Piedmont. North of Atlanta, the largest of the many textile centers in this long factory belt is Charlotte, North Carolina (Fig. 106). Like Richmond, Charlotte is an old city which now is a large railroad center with a modern business district. Most of the textile mills of Charlotte are on the outskirts of the city.

The textile mills in the picture above are near a Piedmont town southeast of Charlotte. Though they are in wooded land, there are many fields of cotton in the countryside nearby, as there are throughout the factory belt. Many streams in this belt furnish water power. The mills in the picture have their own dam. Electricity which is made in Char-

lotte is distributed to many places to be used in many ways.

Both in North Carolina and South Carolina, there now are almost half as many workers in textile mills as on farms. More than a fourth of all the workers in North Carolina now work in factories. There are many tobacco mills, furniture factories, and other factories as well as textile mills. More people now live in this state than in any other state in the Southeast.

Things to Remember about our Country

1. *Cotton is the chief crop of the Southeast, which is famous for its farms.*

Show how work on cotton farms and many kinds of work in Atlanta depend on each other.

2. *The locations of Atlanta and Richmond*

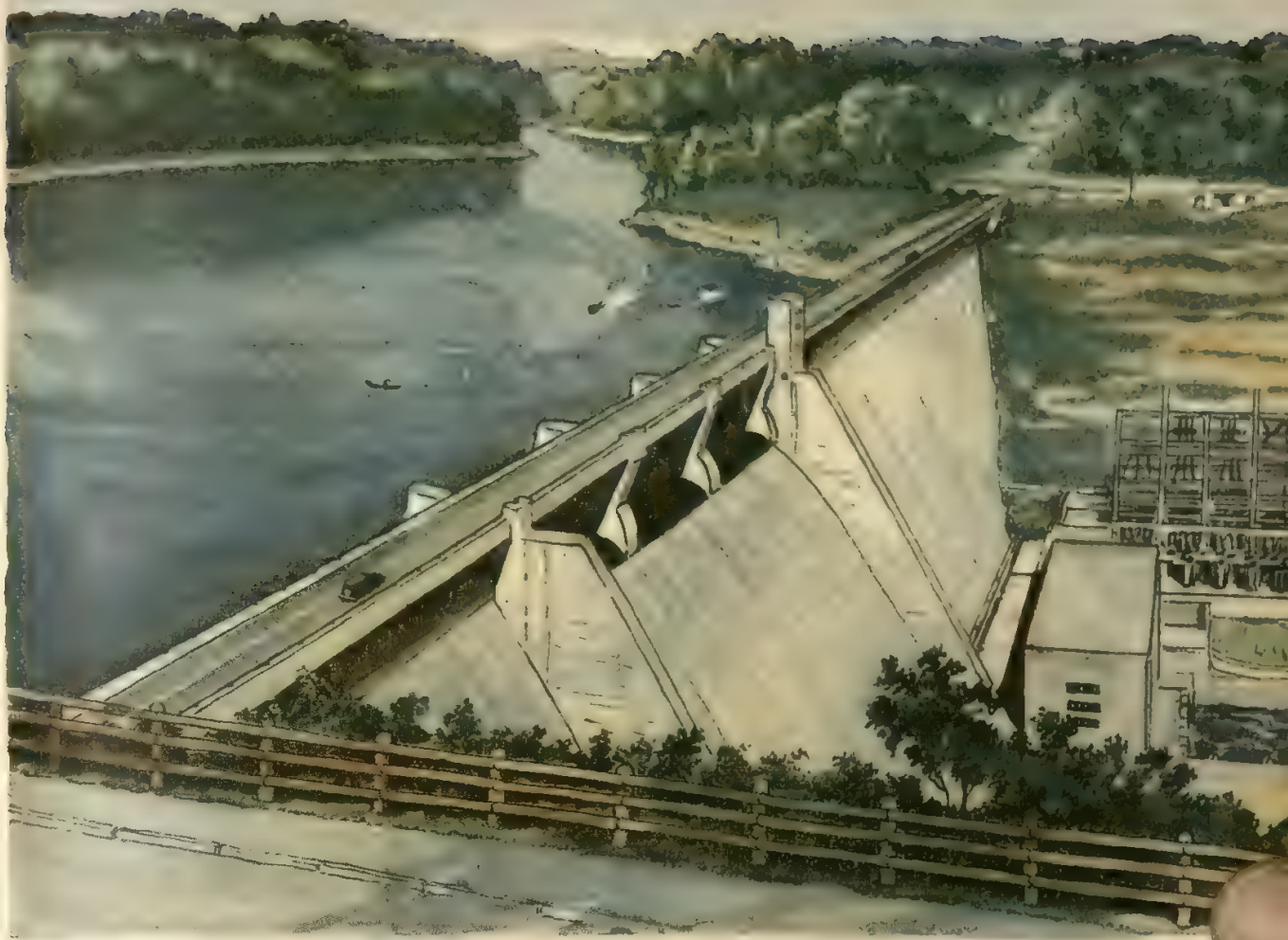


Figure 115. A famous dam in Tennessee

helped those cities to grow large. Show how.

On what important crop does the chief manufacturing work in Richmond depend?

3. *There are few cities in the Southeast on the Atlantic coast. Tell why. Why are Charleston, Norfolk, and Miami so different?*

4. *Much fruit and truck farming now are done in Atlantic states of the Southeast. How does distance from the equator help to explain such farming? Where is citrus fruit grown?*

5. *There are many textile mills in these states. Why are most of these mills in North Carolina, South Carolina, and Georgia?*

Exploring and Finding for Ourselves

1. The southern tip of Florida is nearer the equator than New Orleans. About how many degrees nearer (Fig. 106)? About how many miles?

2. What two cities named on the map in Figure 106 are almost due north of Miami?

A New Kind of Planning

A river change. Rivers played a great part in early life in the river states of Kentucky and Tennessee (pp. 41-44 and 51-54). The Tennessee River flows across both these states. The huge dam shown above was built across a large branch of this river to help make the river more useful. The dam is called Norris Dam. It is about 20 miles northwest of Knoxville, Tennessee (Fig. 106).

The water held back by this dam forms a long lake. A small part of this lake, the powerhouse at the base of the dam, and the wide road on top of the dam can all be seen in the picture. The powerhouse looks small beside the huge dam, which is as high as some skyscrapers.



Figure 116. Memphis from the air

© Fairchild Aerial Surveys

West, East, and Middle. Travels in Kentucky and Tennessee are helpful in understanding what Norris Dam and other changes recently made in the Tennessee Valley mean in the lives of thousands of people. Sometimes it is said that there are three Kentuckys and three Tennessees because of the differences between the western, eastern, and middle parts of these states.

Near the Mississippi. In the western part of both states, there is land between the Tennessee and the Mississippi rivers which is lower than most of the land farther east (Fig. 106). There is much more land between these rivers in Tennessee than in Kentucky. In this lowland, there are tributaries of the Mississippi and the Tennessee. There is low, rich bottom land along the streams and rough, wooded land between stream valleys. These bottom lands are in danger of floods, but the soil in most of them is excellent for growing cotton (p. 47).

Largely because of the great amount of cotton grown in these bottom lands, Memphis became an important city (Fig. 106). The city grew at a good place from which to ship cotton downstream on the Mississippi River. At Memphis, the channel of the river is near the east bank. Near the river bank at this place, there is land which is not in danger of floods, because it is about 40 feet above the river.

Figure 116 shows part of the main business district of Memphis. The river wharf near the left lower edge of the picture is far below the drive along the top of the bluff. The street next to the drive along the river front is called Front Street. One of the buildings on Front Street is the famous Cotton Exchange. In this great market, cotton and products of cotton seed are sold to buyers in many parts of the world. Many cotton traders have offices near-by. Memphis is often called a "cotton capital."

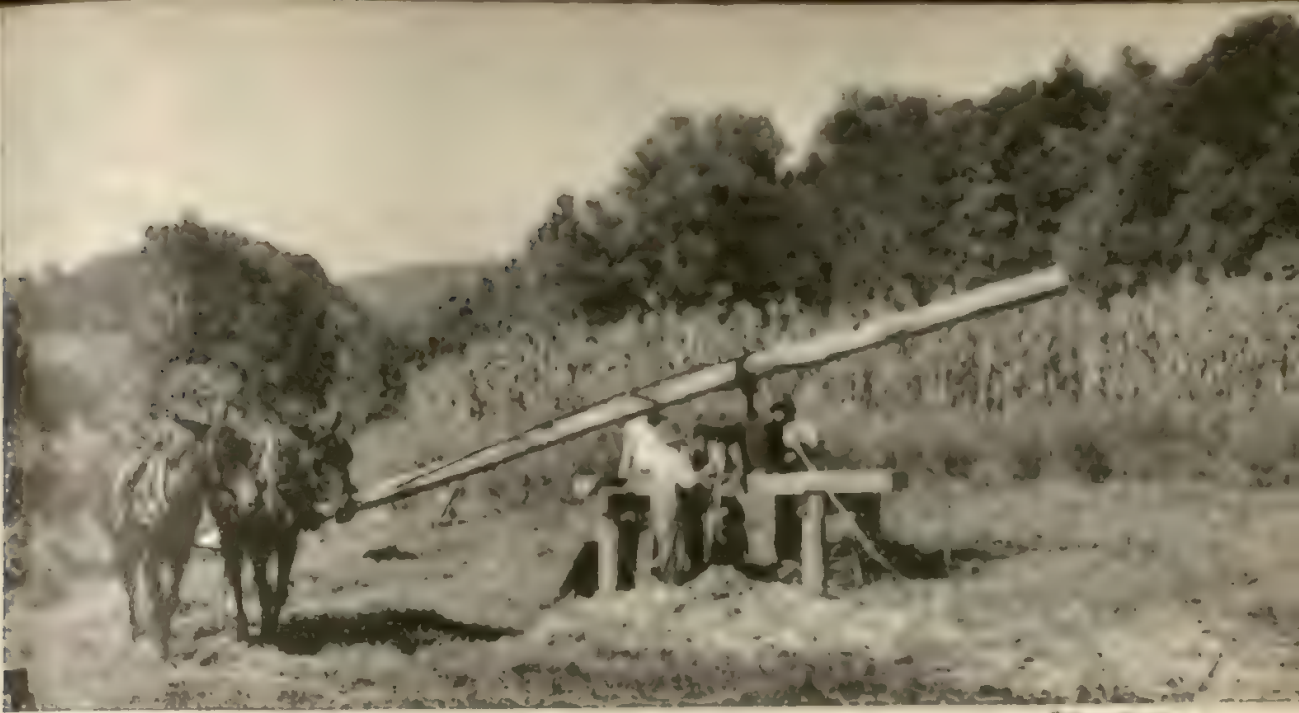


Figure 117. On a mountain farm

© James Sanders



Figure 118. In central Tennessee

Courtesy Tennessee Conservation Department

In the East. Eastern Kentucky and Tennessee are mountainous (Fig. 106). In some of the valleys, as in West Virginia, there are coal mines (p. 120). Many farms in eastern Kentucky and Tennessee are mountain farms. In Figure 117, people on a mountain farm are grinding sweet sorghum cane to get syrup for making molasses. Many mountain farmers use methods much like methods used in early days (p. 36). It is much harder to

make a living on such mountain farms than on rich cotton land.

Between West and East. The fields of tobacco and corn in Figure 118 are in middle Tennessee. Most of the land in middle Tennessee and Kentucky is fertile, rolling land, higher than land near the Mississippi. Nashville, the capital of Tennessee, has grown as a center of trade in the rich middle section of Tennessee. The Blue Grass helped Louis-

ville, Kentucky's great city on the Ohio, to be the largest city except New Orleans in the whole Southeast (pp. 38-40, 44).

Corn, hay, and tobacco are the chief crops of middle Kentucky and middle Tennessee, but wheat, truck, fruit, and other crops also are grown. In both regions, there are many tree-dotted pastures, such as the Kentucky Blue Grass pastures in Figure 119. The coming of automobiles harmed the business of raising fine driving horses. But fine saddle horses are raised, and much land is used for cattle and sheep. Hogs are as important as in early days on many farms of Kentucky and Tennessee.

Many people who live in Kentucky and Tennessee like to say that almost every kind of farming done between the Gulf of Mexico and the Great Lakes is done somewhere in these two states.

A great traveler. Both the Tennessee River and the long branch of that river on which Norris Dam has been built rise in southwestern Virginia (Fig. 106). Some small branches of the river rise in North Carolina. The Tennessee flows from Knoxville to Chattanooga through the great Appalachian Valley in the mountainous East. In the southern end of this valley, tributaries that rise in Georgia flow into the Tennessee. This great river flows across northern Alabama to the northeastern corner of Mississippi before it turns north to cross Tennessee and Kentucky to the Ohio. Seven of the 11 states of the Southeast have some land in the Tennessee Valley. Water that flows in this river from its source in Virginia all the way to the Ohio River travels about 950 miles.

The need to work together. Since parts of seven states are in the Tennessee Valley, the United States government and people of these seven states need to work together to make the best use of rivers and land in the valley. An organization called the Tennessee Valley Authority was set up by Congress in 1933 to study the problems of the valley and

to carry on work that would help to solve those problems.

It was found that streams were carrying good soil away from many farms. From time to time, crops and buildings near streams were being damaged by floods. Some of this loss could be prevented.

The Tennessee was used as a highway from its mouth to northern Alabama. River boats carried farm implements, other manufactured goods, and groceries upstream to people along the river. Grain and livestock, forest products such as railroad ties, and other products were carried downstream. At times, however, floods or low water had made it hard for boats to use this highway. It was clear that the level of the water must be kept from changing greatly if the highway was to be as useful as possible.

It was also clear that water power could be used to help people both on farms and in towns in many ways. A huge dam, called Wilson Dam, had been built during World War I on the Tennessee River at Muscle Shoals (Fig. 106). But much power that could be developed by building dams at other places was being wasted. It was seen that dams built at carefully selected places would also help to prevent soil erosion and floods.

Solving problems. Selecting places at which to build dams was a very important step toward making the best use of rivers and land in the valley. Dams have now been completed at several of the places selected. They are helping to solve many problems.

Electricity made at Norris Dam, for instance, is being used not only in factories but also in many town and farm homes in which people had never been able to have electric lights or any electrical equipment or machinery. Water from the lake above the dam can be let through the gates as it is needed to help keep the level of the water in the river even. Reservoirs such as this lake on the upper parts of streams help to prevent soil erosion and floods.



Figure 119. In the famous Blue Grass region

The new kind of planning work done in the Tennessee Valley has made people everywhere in the United States see more clearly how the use of land and of water should go hand in hand. Everywhere, too, it is seen more clearly that, in order to make the best use of natural resources, people must work together. Of course, people of the Southeast are proud to be taking part in this important kind of planning.

Things to Remember about our Country

1. *There are important differences between the western, eastern, and middle parts of Tennessee and Kentucky. Show how these differences help to explain differences in farming in the western, eastern, and middle parts of these states.*

2. *The kind of planning work done in the Tennessee Valley will help thousands of people to make a better living. What has been done to control water in the rivers of the valley? How does this help thousands of people?*

Exploring and Finding for Ourselves

1. Along the boundary between North Carolina and Tennessee there is a famous national park. Find from the map in Figure 106 why this is a good place for a park.

2. What direction would one travel in going upstream on the Tennessee River to Wilson Dam? What direction would one travel in going upstream on that river in eastern Tennessee?

3. In what ways are Louisville and Memphis much alike? In what ways are they different? Give reasons for some of these differences.

4. Why is Nashville's location a good location for a state capital?

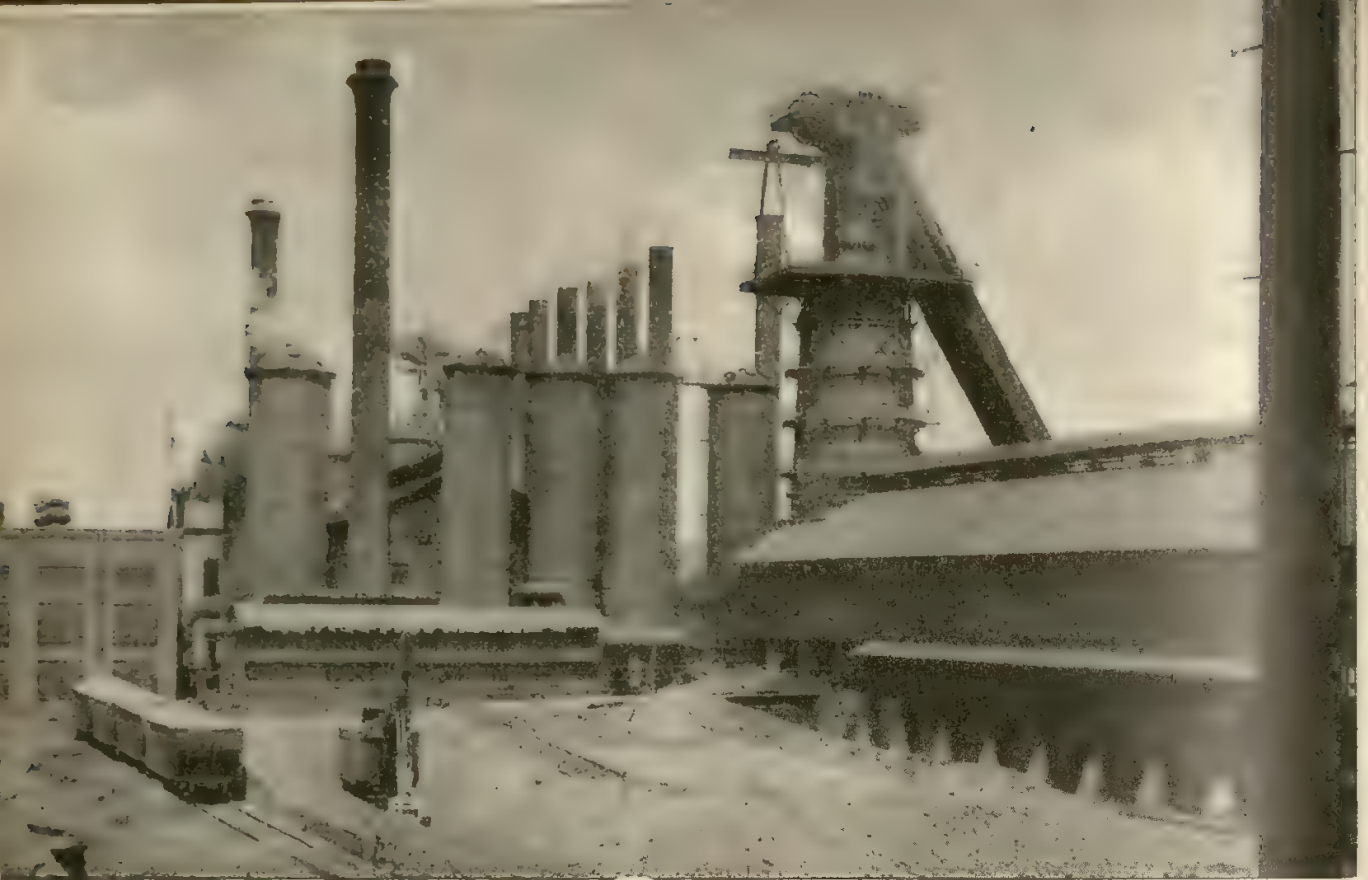


Figure 120. In Birmingham, Alabama

Courtesy Birmingham Chamber of Commerce

Figure 121. An aluminum plant

© Ewing Galloway



Along the Gulf and Lower Mississippi

West in the cotton belt. Alabama, Mississippi, Arkansas, and Louisiana are all important cotton-producing states. Work on most farms and in most forests in these four states is much like work on farms and in forests farther east in the cotton belt. But, as the pictures on this page suggest, some kinds of work not seen in the eastern part of the land of cotton go on in these states. In some lands near the Mississippi, sugar cane and rice are important crops. New Orleans, near the mouth of the Mississippi, is the largest city in Southeastern United States.

Heavy manufacturing. The mills in Figure 120 are in Birmingham, Alabama (Fig. 106). This large railroad center near the southern end of the Appalachian Valley is often called the Pittsburgh of the South because of its iron and steel mills. The city was named for an English city famous for iron and steel.

Birmingham, like Pittsburgh, is near

bituminous coal fields. As the map on page 120 shows, the southern part of the long belt of Appalachian coal fields is in northern Alabama. Birmingham has another big advantage for making iron and steel. Iron ore as well as coal is mined in northern Alabama. Red Mountain, in the range of iron-ore hills near-by, is only about two miles from the center of Birmingham.

There are, of course, modern business buildings in Birmingham. There are broad streets and thousands of homes. But the city is, more than anything else, an "iron and steel city." There are not only mills in which iron and steel are made, but mills that make iron and steel products. Both small things, such as nails, and heavy products, such as big pieces of steel used in building bridges, are made in Birmingham. Birmingham iron and steel are used in heavy manufacturing in other southern cities. At Mobile, Alabama, for instance, large steel ships are built, as at Norfolk.

New mills. The Southeast played an important part in manufacturing many kinds of materials used in winning World War II. New mills of many kinds were built there. Figure 121 shows an Alabama mill in which aluminum for use in airplanes is made from bauxite, aluminum ore. Some of the bauxite used in this mill is mined in Alabama. Bauxite also comes to the mill from mines in Arkansas. The building at the right is much like a tippie in a coal-mining village (p. 120). In this building ore is sorted, and large pieces are broken into smaller pieces.

Forests in the Southeast. Forests grow on more than half of the land in the Southeast. Pines are the chief trees in most parts of the southern forest, Figure 122, along the Gulf coast and the southern Atlantic coast. Cypress trees, which grow in swamps, and hardwood trees of kinds that grow on valley bottoms are found in forests along the Mississippi River. In forests on the higher lands, there are many oak trees.

Work in pine forests. Logs for pulpwood as well as logs for lumber are cut in southern pine forests. Wood pulp now is used in making rayon and several other materials besides paper. Much rayon is made in textile mills in North Carolina and South Carolina. In Southeastern United States, new "crops" of pulpwood can be grown in from 20

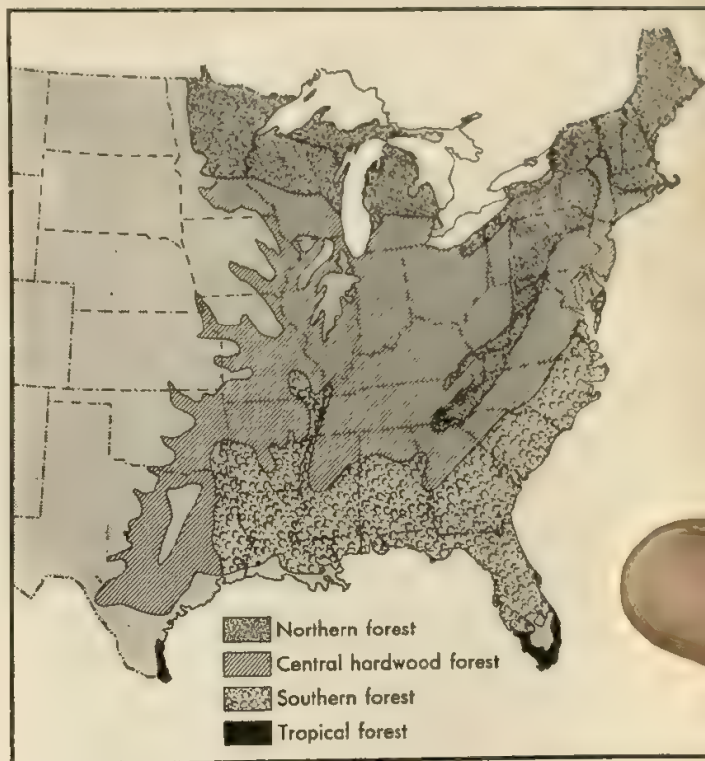


Figure 122. Forest regions in eastern United States

to 30 years, and it is thought that more and more pulpwood will come from southern pine forests.

There are turpentine factories called stills in or near some pine forests of the Southeast. In these stills turpentine is distilled from resin. Resin is an oily substance that flows from cuts made in the trunks of pine trees in these forests. Slanting cuts are made in the trunks of growing pines, and cups into which the resin flows are fastened at the lower ends of the cuts.

Logs for sawmills. Much of the timber in southern forests is second-growth timber. In



Figure 123. In a southern forest

many places, first-growth timber has been cut off, as in the Northeast, but much logging is still done. The scene in Figure 123 is in Mississippi. The logs that were being loaded were taken to a big, modern lumber mill.

Cypress logging. Cutting cypress logs in swampy land and getting the logs to lumber mills are harder than most logging on dry land. Much of the work is done in boats. Cypress trees are cut down and the branches are cut off when water in the swamps is low. Machines much like the one in the picture above are taken on flatboats to the edge of some stream or lake near-by. Lanes are cut through the swamps. When the water is several feet deep, men go into the swamps in canoes to pole the logs along these lanes. The logs are poled to places where they can be fastened to cables from the machine and pulled to the flatboat. There the logs are made into rafts to be towed to sawmills.

On a sugar plantation. The pictures on the next page show sugar cane growing near the Gulf coast of Louisiana, west of New Orleans. This part of Louisiana is just south of the forest region along the lower Mississippi (Fig. 122). The sugar-cane field in Figure 124 is on the delta of that river. The field is low as well as flat. The cane is growing in rich soil. Everywhere the delta lands are almost flat. Almost everywhere they are fertile.

The picture in Figure 124 shows the field in late spring. The picture in Figure 125 shows work in the same field in late autumn.

Sugar-cane plants look somewhat like corn, but sugar cane is not grown for grain and needs a much longer growing season than corn needs. Sugar cane is grown for the sweet juice in the stalk, or cane, of the plant. The lower picture shows how cane is harvested. The worker to the left has just cut off the top of a stalk and is slashing off the leaves. The



Figure 124. Young sugar cane

worker to the right is cutting off the stalks he has topped and stripped. Stalks already cut off are in a pile at the right in the picture.

The stalks are hauled to a mill where they are crushed to get out of them the juice from which sugar is made. Sugar mills are big mills with modern machinery, not small grinding machines like sorghum mills on mountain farms (p. 141). Several thousand pounds of sugar can be made from the cane grown on an acre of good sugar land.

Planting and cultivating. Most sugar in Louisiana is not grown from seed. Instead of seed, pieces of stalk are planted. Just as many grain farmers select their best grain for seed, sugar planters select some of their best stalks to plant. Some planters plant stalks every year because they think they get better crops this way. But planting does not have to be done each year. If stubble is left in the field, it sprouts again and produces a new crop the next year. Two or three crops may be grown from one planting.

Some fields are planted in autumn. Others are planted in winter or early spring. The stalks begin to grow in spring. As soon as the cane in a field is well above the ground, cultivating is begun.

Figure 125. Harvesting sugar cane





Figure 126. Where sugar cane is grown

Where sugar cane grows. On the map in Figure 126, a dotted line runs across northern Louisiana and central Mississippi, Alabama, Georgia, and South Carolina. This line is the northern boundary of the part of the Southeast in which sugar cane is grown. Except in the Louisiana district on the Mississippi delta and in a small district in southern Florida, sugar cane is grown chiefly for syrup. The cane is used much as sorghum cane is used farther north.

Sugar cane needs a growing season at least eight months long. Harvest in the Louisiana

district begins in October. But if cane is left standing till later in the autumn, the amount of sugar in the stalk increases. The long growing season, much hot weather and rain, and very rich soils have helped sugar growers to be successful in the sugar districts of Louisiana and Florida.

A crop that grows in water. The water flowing out of the pipe into the pool in Figure 127 has been pumped from a deep well. A tractor furnishes the power that runs the pump. A ditch leads from this pool to rice fields.

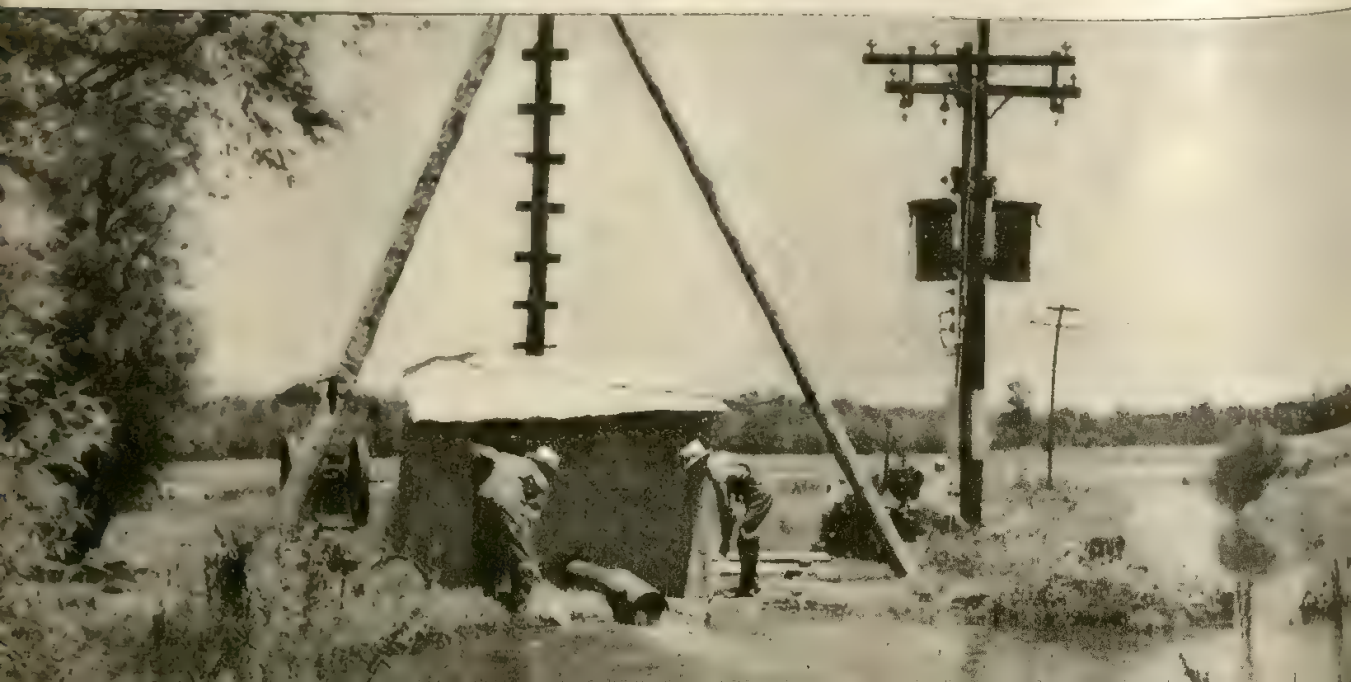
These rice fields are in northeastern Arkansas. They are a long distance from the coast where rice fields were to be seen in early days (p. 29). But rice needs water now, as then. Today, as long ago, rice fields are divided into small lots surrounded by low dikes or levees. These dikes hold the water on the field when it is needed. The sides of the dikes are carefully sloped so binders and other machines can be driven over them.

Farmers now know that rice lands wear out. Many rice farmers use a field for a few years for rice, and then use the field for other crops for a few years before using it for rice again.

[148]

Figure 127. Water for rice fields

Carl Mydans



Most of the rice now is grown in the eastern part of Arkansas and along the Gulf coast near the boundary between Louisiana and Texas.

The great crop. It is easy to see from the map in Figure 128 that the Southeast is truly a land of cotton. Some parts of the 11 southeastern states produce so much cotton that they look like black spots on the map. The Mississippi runs through one of these regions. In this region are eastern Arkansas, western Tennessee, and north-western Mississippi. Memphis is near the center of this region. Another region of heavy production is in northern Alabama. A third region extends from Georgia through South Carolina into North Carolina.

The map shows that much cotton is grown also in Texas and Oklahoma. In those two states, as in the Southeast, there are several areas of heavy production.

Of course, these regions where so much cotton is grown are the regions where soils are good for cotton (p. 47). Rice lands and sugar lands along the Gulf coast of Louisiana and in Florida have too much rain in autumn to be good lands for growing cotton. In parts of western Texas and Oklahoma, there is not enough rainfall for cotton (Fig. 88). The growing season is not long enough for cotton in most parts of Virginia and Kentucky.

Mistaken ideas that maps may give. Many visitors to the Southeast who see cotton plantations for the first time are greatly surprised. A map such as the map in Figure 128 makes many people think that they will see almost nothing but cotton fields and plantation homes in regions that produce large amounts of cotton. Such visitors expect to drive mile after mile in these regions along roads bordered almost all the way by great fields of cotton stretching as far as one can see in every direction.

Maps and stories may easily make people imagine such things. In Figure 128 the north-eastern corner of Louisiana on the Mississippi

River is less than *one inch* from the easternmost point on the coast of Georgia. The real places for which these points on the map stand are about *600 miles apart*. Of course it is impossible to put in less than one inch signs for all the things that are seen in traveling 600 miles.

A small forest map might make people who do not think carefully imagine they would see nothing but forests on a trip from Savannah west to the Mississippi. A small corn map might make the people think they would see almost nothing but corn on that trip. A

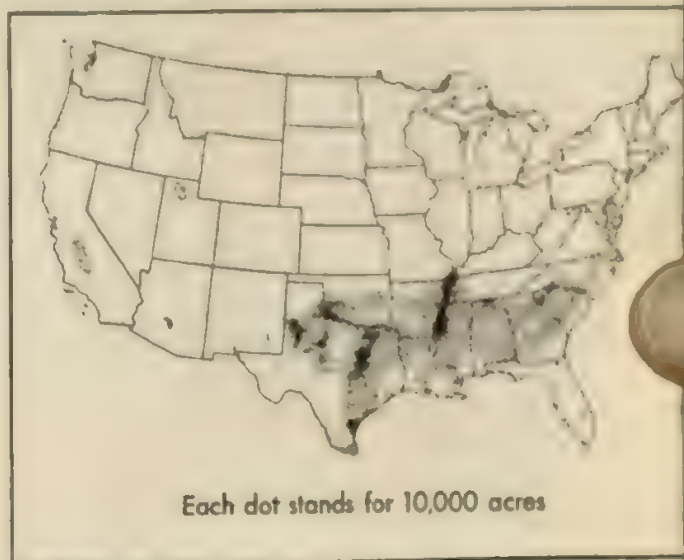


Figure 128. Where cotton is grown

small cattle map might make people think that on the same trip they would see more pastures than anything else. A small map on which all the streams and all the villages were shown might make people think that there was no room at all for farms, and so on.

Work for many people. Though many kinds of crops are raised in the South, more people there depend on cotton than on any other crop. In most towns, as on many plantations, there are cotton gins (Fig. 112). In the gins, where cotton lint and seed are separated, the lint is bound into bales. A bale of cotton weighs 500 pounds. Bales are ready

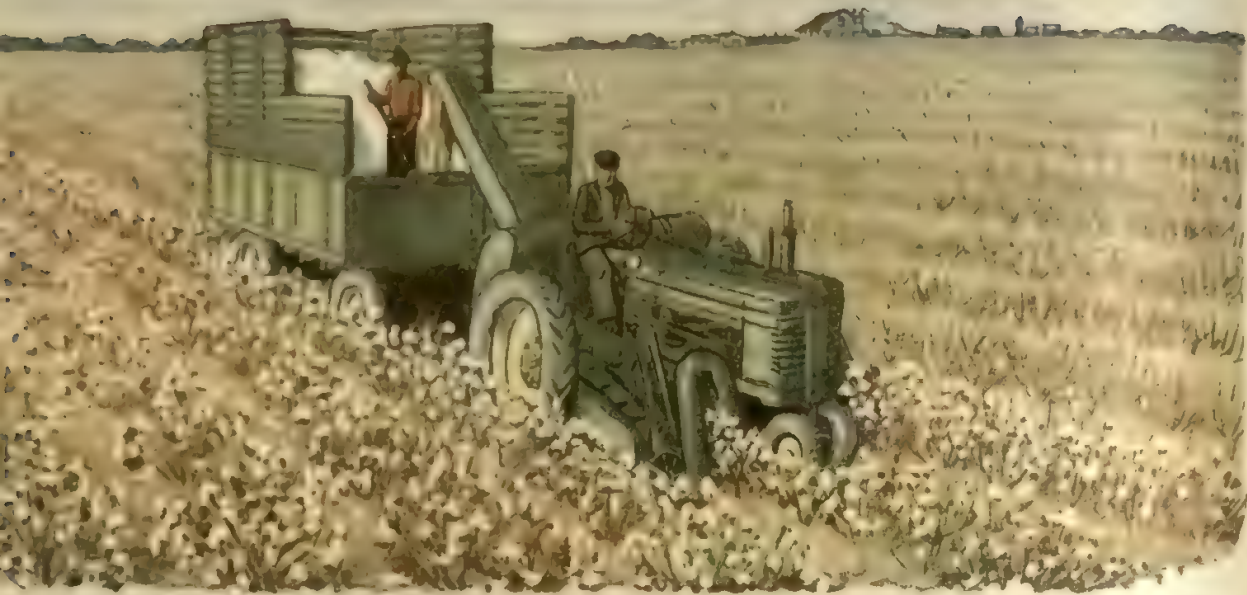


Figure 129. A cotton-picking machine

for market when they leave the gins. Many town and city workers make their living in gins and cotton markets.

Many other workers are needed to help move millions of bales of cotton by truck, train, and river boat to factories or to ports from which cotton is shipped by sea. Altogether, several million people take part in raising, marketing, and moving cotton. Cotton seed, as well as cotton lint, is marketed. Much seed is sold to mills where cotton-seed oil and other cotton-seed products are made.

Planting and chopping. In spring, the first very busy time in the cotton fields is planting time. Cotton is planted some time in April in most parts of the South.

Tiny cotton plants are not strong. To help the little plants push through the ground, seeds are planted close together in rows. When the plants are about six inches tall, the rows are thinned by chopping out some of the plants. Plants that are left standing then have room enough to grow large. Cotton is "chopped" sometime in May in most parts of the cotton belt.

Men and women, young and old, help with

cotton chopping. Many children who are old enough to use a hoe also help. On big plantations large groups of workers are needed at chopping time. Many farmers on small farms can chop their cotton with the help of their families. After cotton is chopped, cotton fields are cultivated several times. But between planting and harvest, the busiest time in those fields is chopping time

Harvest. After cotton begins to bloom in early summer, there is little work to be done in the cotton fields before harvest. The busiest season of the year both in the cotton fields and in many towns and cities in the cotton belt begins when cotton picking starts in late August or early autumn. The gins are busy as soon as cotton begins to come to them from the fields. Cotton buyers are busy as soon as bales of lint begin to come from the gins. Bales of cotton soon pile up at many shipping points. During the long picking season, which lasts well into December, much cotton work goes on almost everywhere in the cotton belt.

As the Texas scene in Figure 129 shows, machines are used in harvesting some of the



Figure 130. Galveston from the air

cotton. Most cotton, however, is picked by hand. More workers are needed in the cotton fields at picking time than at any other time. Fields are commonly picked over three or four times because some bolls on cotton plants are ready to pick much earlier than others.

Two Texas ports. Some cotton from the fields shown in Figure 129 may be sent to Galveston to be shipped away by sea. From this Texas port, part of which is shown in Figure 130, much cotton is shipped. Galveston is on an island near the entrance to a large bay (Fig. 106). The city extends across the island from the Gulf of Mexico, seen along the top edge of the picture, to Galveston harbor, on the bay side of the city. The long line of wharves shown in the pic-

ture along the nearer side of the city borders the harbor. The three ships in the lower part of the picture are in yards where ships are built and repaired.

Though Galveston is on an island, trucks and trains from the mainland meet ocean ships at Galveston wharves. Two embankments, called causeways, have been built by man to connect the island with the mainland.

Not far from Galveston, there are rich sulphur mines. Sulphur ranks next to cotton in the exports shipped from this port.

Galveston is not only an important port, but the chief pleasure resort on the Gulf coast of Texas. There are good beaches and many hotels along the Gulf coast of the city.

Another Texas port from which much cotton is shipped is Houston (Fig. 106). On the

map. Houston does not look like a port. To make it a port for ocean ships, men dug a deep-water channel between the city and Galveston Bay. One of the chief exports of the city is petroleum. Partly because Houston is back from the coast, it has grown much more rapidly than Galveston. It has become much larger than that island port.

Cotton and weather. The amount of cotton raised in any one year depends partly on weather. When cotton plants begin to grow in spring, cotton growers hope for mild weather during the next few weeks and for many *light* showers. Young cotton plants may be injured by hot, dry weather. They also may be injured by cold, rainy weather, or by heavy showers.

As soon as cotton plants begin to bloom in early summer, they need warm days, warm nights, much sunshine and much water. It takes much heat, light and moisture to make the plants keep on blooming well and to make the cotton bolls grow rapidly.

The blossoms on cotton plants are two or three inches across. When the flowers open, the petals are white, but soon the petals turn first pink and then purple and drop off. Cotton bolls do not begin to burst open before late summer. During the summer months, cotton growers hope for rather heavy thunder showers every few days, with bright warm days between showers.

In autumn, people who raise cotton want many bright days and only a few *light* showers. If much rain comes after cotton picking begins, fibers in the open bolls may be badly damaged. If no rain falls, late blossoms and bolls may be injured.

A harmful insect. Every year, insects called boll weevils do much damage to cotton. These weevils bore into flower buds or young bolls of cotton and lay eggs there. Grubs that come from these eggs harm the fiber in the bolls. Weevils may do so much damage in a cotton field that the cotton is not worth harvesting.

Changes in cotton work. In early days, most of the cotton raised in the Southeast was raised on big plantations with the help of Negro slaves. Now a large part of the cotton crop of the South is raised on farms. On plantations, much cotton is raised by tenants called "share croppers." Many tenants are Negroes, but there also are many white tenants. Most share croppers rent only about 25 or 30 acres. These tenants share the cotton they raise with plantation owners to pay for the use of their land.

Many farmers who own farms instead of big plantations use only part of their crop land for cotton and practice crop rotation. Fear of losing their cotton crop because of boll weevils helped to make many farmers and planters decide to turn from one-crop farming to raising crops of several kinds and cattle or other stock. Fields used for cotton in some years are used for crops such as corn, oats, peanuts, beans, and sorghum in other years.

A look ahead. Before very long, there may be other great changes in cotton work. During World War II, many workers left cotton fields to work in plants where war materials were being made. It is thought that many of them will not return to work on plantations because they can make a better living by factory or other work.

Some owners of large plantations have been experimenting with the use of new farm machinery to take the place of the hand labor which had been done by their helpers. One man with a mule and a one-row planting machine plants about five acres of cotton in a day. With a tractor and a two-row planting machine one man can plant more than three times as many acres in that time. A kind of picking machine newer than the kind shown in Figure 129 has been invented. This machine picks as much cotton in a day as 30 or 40 workers could pick by hand. With such machines, it is thought the cost of raising cotton will be less than it now is. Much



Figure 131. Pumping station on a gas pipe line

© Robert Yarnall Richie

work that has been done by hand on cotton plantations, then, may soon be done by machines. Fewer workers may be needed on southern plantations than in the past.

Probably more and more workers will be needed for other kinds of work, however. Some parts of the Southeast are rich in oil and gas. The Louisiana plant in Figure 131 is a plant from which gas is distributed through pipes to many other places. More workers will be needed to help in the use of mineral riches in Southeastern United States. And many more factory workers will be needed.

Figure 132 shows big tobacco warehouses in Durham, North Carolina. Many people there help carry on tobacco trade and manufacturing. New factories and improvements in farming that help men grow crops at less cost will help trade grow. More workers will

be needed in southern centers of manufacturing and trade.

The Southeast will always be famous for farm crops. But before long there may be as many city people in the Southeast as there are farm and village people.

Things to Remember about our Country

1. *There are many kinds of mills and factories in the Southeast. What is the chief iron and steel center there? Give reasons.*
2. *Much work goes on in forests of the Southeast though much of the best timber has been cut. What three kinds of work go on in southern pine forests? Why is cypress logging hard?*
3. *Two southern crops not grown in the Northeast are rice and sugar. Where is the chief sugar-cane region? Give reasons. How has rice farming changed since early days?*

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Figure 132. Tobacco warehouses in North Carolina

Marion Post Wolcott





Figure 133.

4. Millions of people in the Southeast depend on the great cotton crop. What would you see going on in many cotton fields in May? Why is autumn the busiest season for cotton workers on farms and in towns?

How may the cotton crop be harmed by weevils? By weather at different seasons?

Exploring and Finding for Ourselves

New Orleans is the largest port of the Southeast. Latin American products such as bananas and coffee are imported there. What can you tell about New Orleans to help explain these facts (pp. 48, 53, Fig. 106; and Fig. 128)?



Figure 134. One of the railroad yards at Chicago

Jack Delano

North Central United States

Between East and West

Eight states. The states shown completely on the map on the opposite page, except Kentucky and West Virginia, are the north-central states. Six of these states border the Great Lakes. Seven of them are bounded partly by the Ohio River or the Mississippi River.

East and West. The names East and West have had different meanings at different times. Until 1803 (p 45), the Mississippi River was the western boundary of the United States. All places between the Appalachian Mountains and the Mississippi were then in the West. Even Ohio, the state in this group of states that reaches farthest east, was a part of the West. Later, a New West developed beyond the Mississippi. The Old West really became part of the East. Most people now think of the West as the part of the country beyond the Rocky Mountains.

All the eight states of the north-central

group are now in the eastern half of the country (Fig. 7). In many ways, however, they have a *central location*.

A central location. These states are in the central plains between the Appalachian Mountains and the Rocky Mountains (Fig. 7). Across five of them runs the low *watershed*, or water-parting line, that separates land which slopes to the Great Lakes from land which slopes to the Ohio-Mississippi rivers. This line separates the greatest two waterway systems on the continent.

Very important also is the location of these states on the main land routes of the country. This important location is suggested by the "pattern" of the principal railroads shown in Figure 133. They lead out from Chicago in every direction, across the eight states. On every side they lead to Chicago, the central meeting place of railroad traffic.

Figure 134 is a general view of one of the railroad yards of one of the railroad systems

that reach Chicago from the Pacific coast. Other great railroads reach the city from each ocean coast and from the Gulf of Mexico. They all end at Chicago. No railroad runs on through the city.

The snow on the ground and on the tops of the cars shows, of course, that the picture was taken in winter. At that season all Chicagoland depends entirely on land and air transportation. The Great Lakes, rivers, and canals are closed to navigation in winter. The wintry scene in the picture is a reminder, too, that the states which surround Chicago are not simply *central* states. They are *north-central* states. Their northern boundary is the Canadian boundary (Fig. 133).

On the waterways. The pictures in Figures 135 and 136 help to recall stories already

told about the use of the Mississippi River and the Great Lakes in earlier days (pp. 50-54, and p. 59). These pictures also tell something about those waterways today.

Figure 135 is a view across the Mississippi to part of the city of St. Louis. A few blocks back from the river, in the upper center of the picture, is the main retail business district. All around this district there are buildings used for wholesale trade, light manufacturing, or other purposes. The docks in the foreground are in East St. Louis, Illinois (Fig. 133). They are modern floating docks that move up or down as the level of the water in the river changes. The work of the two cities is tied together very closely. Probably they would be united in one city were they not in different states.

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Figure 135. The Mississippi River at St. Louis

© Charles Phelps Cushing



In "steamboat days" St. Louis depended largely on its river trade (p. 53). The old steamboat landing, clearly shown in the picture, was a busy, noisy place in those days. Now it is almost deserted. Grass grows between the paving stones. Railroad tracks follow the upper edge of the landing. From passing trains people may sometimes look in mild wonder at some small steamboat on the river.

St. Louis is the largest of the river cities (Fig. 133). It depends chiefly on its many railroads. The river, though once a great highway, has actually become a disadvantage in some ways. For instance, the river is a barrier between St. Louis and East St. Louis. They are divided cities with many interests in common. It is difficult and costly to build

bridges across the wide river. Only a few have been built.

Many smaller cities, like St. Louis, have outgrown their dependence on rivers as trade routes.

As highways, the Great Lakes are more like oceans than rivers. They still carry, and doubtless always will carry, a huge traffic. Unfortunately, the inner harbors at the larger cities on the Great Lakes are the lower ends of small streams, hardly fit to be called rivers.

In Figure 136 a big freighter is bringing coal into the inner harbor at Milwaukee. The city uses much coal mined in Pennsylvania or West Virginia that is brought in such freighters from ports on Lake Erie (pp. 62, 64). The long freighter in the picture could

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Figure 136. Part of the inner harbor at Milwaukee

© Gendreau





Figure 137. Well-kept buildings on an Iowa farm

Arthur Rothstein

not get up the narrow, crooked river without the help of a tug.

Every time a bridge opens to let the freighter pass, automobiles and people on foot must wait for the bridge to close. So the river traffic hinders land traffic. This is serious on busy days at the rush hours. Luckily, the level of the water in this river does not change much. If it did, the buildings on the bank could not stand where they do.

Milwaukee is not alone in its harbor problems. No big city on the Great Lakes has been able to do without harbor improvements very long. The cry for further improvements somewhere is always heard.

Like and unlike. The North-Central States are like each neighboring group of states in some ways. They are like the Northeast in having many cities, many factories, many dairy farms. For instance, the Iowa farm in Figure 137, with its neatly-painted buildings, its hay barn and silo and stock shed, might be in central New York or southern New England. The people who made this farm may actually have come from New York or New England.

The importance of farming in the northern interior recalls the Southeast. Each of these

regions has one crop more important than any other—cotton in the South, corn in the North. The prairie lands of Illinois and Iowa suggest the treeless lands farther west. These are just a few samples of general likenesses to regions on all sides.

There are also striking differences from other regions. The chief kinds of farming are different. The chief kinds of manufacturing also are different. And the *combination* of different kinds of work in city and country is unlike that in any other part of the country. It is not merely in their location that the North-Central States are “between the East and the West.”

Exploring and Finding for Ourselves

1. What are the capitals of the states here included in the north-central group of states (Fig. 133)?
2. How do the locations in their states of the capitals of Michigan and Wisconsin differ from the locations of the capitals of Ohio and Indiana? Which two do you think are located best for the people of their states? In thinking about this, use first the map in Figure 133. Then look carefully at the map in Figure 81. Does the population map change your opinion? Why?



Figure 138. In the heart of the "corn country"

John Vachon

Farms and Farming

Farms on every side. The farms in the picture above are in west-central Iowa. They are about 150 miles north of the east-west line marked 40° on the map in Figure 133. Eastward from these farms all the way to central Ohio and westward from them to the Missouri River there are farm-land views much like the one in the picture.

Almost everywhere along this line and for many miles both north and south, the roads are bordered by fenced fields used for crops. The farms are neither very small nor very large. Several farms are in sight at once from almost any point of view, just as in the picture. Nowhere else in the country is there such an unbroken belt of medium-sized farms. Most of the farm homes look comfortable. Most of the farms seem well kept.

The picture was taken early in May. Later on, such a picture would show different crops growing in the fields—corn, wheat, oats, hay, and others. But corn is the main crop every-

where in this belt. This is the heart of the "corn country."

Farming without horses. Many farms in the corn country are worked without horses. Tractors and self-moving machines are used in place of horse-drawn implements.

The pioneers who raised corn in the Ohio Valley in early days, page 38, would marvel if they could see the labor-saving and time-saving machinery that is now used. They did not even have the horse-drawn equipment that later came into general use and is now being replaced. They had to do much hand work. They could not hire much help. A farmer and his family could cultivate only a few acres. It was not easy to dispose of any surplus corn or other grain. Farm life has changed more than the pioneers could have imagined.

Machines for every use. There are new and improved farm machines to use in every way in every season.

In autumn or in early spring, all-purpose tractors are used to pull modern plows and

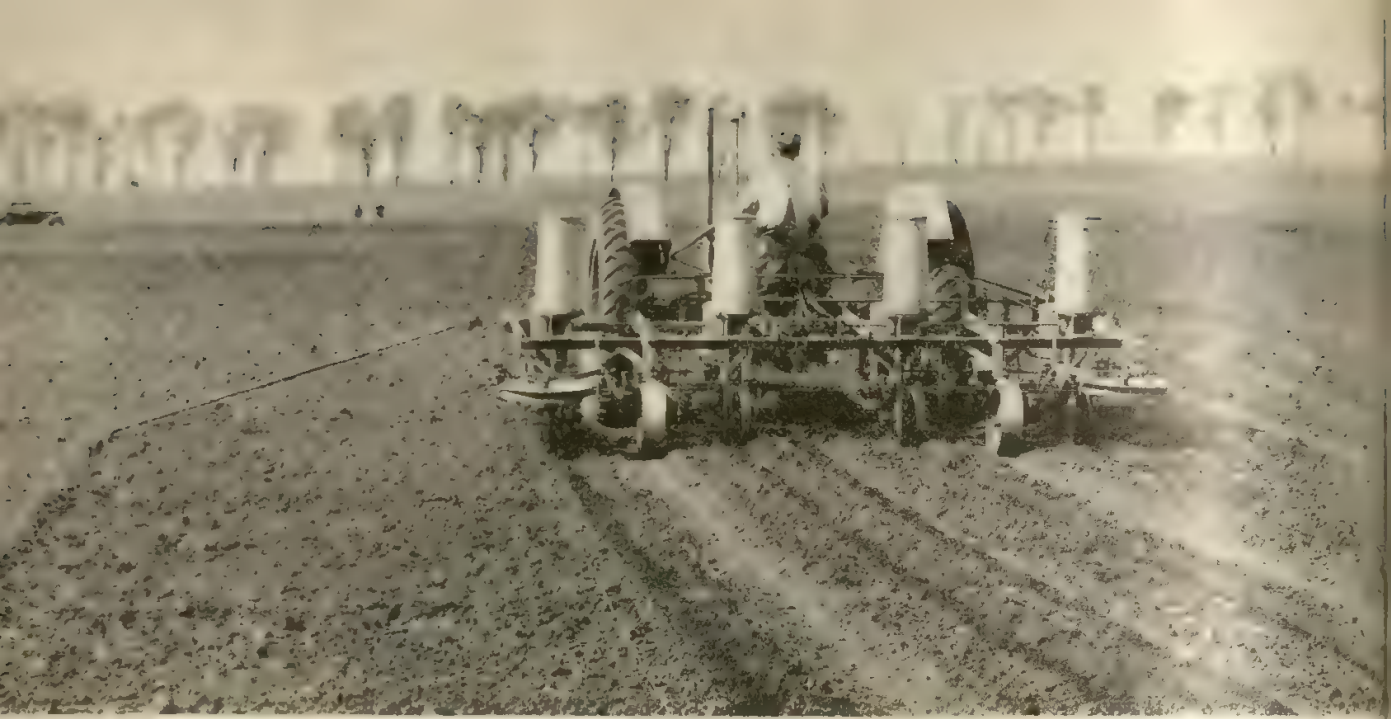


Figure 139. Using a modern corn planter

© James Sawders



Figure 140. Using a modern corn picker

© Gendreau

harrows. Some farmers plow their corn fields in autumn, but do not harrow then. They use plows that leave little up-turned ridges of soil. During the winter these ridges catch some of the snow and keep it from drifting badly. Big drifts in some parts of a field and little or no snow in other parts would be undesirable. The next spring some places might get too much water as the snow melted. Other places might not get enough water.

If a farmer leaves little surface ridges in the autumn as snow catchers, he harrows his plowed fields in early spring before planting time. This breaks the clods, levels the ground, and stirs the soil.

There are other special machines, as well as special plows and harrows, to suit different ways of farming.

From planter to picker. Corn is planted in late April or early May, if the ground is ready. The top picture on the opposite page shows a farmer using a modern corn planter. Four rows, exactly spaced, are planted on each trip across the field. With this machine, about 40 acres can be planted in an eight-hour work day.

Farmers hope their corn will be "knee-high on the Fourth of July." If it is that high, it has a good chance to grow to full size and ripen before the first frost of autumn. After the corn is about hip high, it is not cultivated. Before then, the ground between the rows of corn must be worked over three or four times with implements called cultivators. They destroy the fast-growing weeds. Cultivators, like plows and harrows, are now commonly pulled with tractors.

The newest way to harvest corn is shown in the bottom picture on the opposite page. The farmer is using his tractor to pull a two-row corn picker. The corn, plucked from the stalks and cleanly husked, is dropped into the wagon. The tractor pulls the wagon, as well as the picker.

Worries. One might think that any farmer who has such modern machines as those in

the pictures would have no reason to worry about his corn crop. There are many things, though, that his machines cannot do for him. For instance, they cannot make him sure of good yields or good prices. And those things are of great importance to him.

Good yields depend much on good corn weather. While growing actively, corn needs warm or hot days, mild nights, and frequent showers. July has been called "the month of worries" for corn growers. A drought then, or much cool weather, may greatly injure the crop.

Better corn. Farmers try, of course, to grow good varieties, or kinds, of corn. Before some farmers harvest their crop, they select and pick the best ears of corn in their fields to use for seed the next year. Most farmers in the "corn country" now grow corn that scientists have improved by the cross-breeding of plants. Such corn is called "hybrid corn." The cobs are large and covered all over with kernels of high quality.

Of course, farmers do not grow corn in the same fields year after year. They rotate crops. They also fertilize their fields more than they did in earlier years. Animal manure from barns and sheds is spread on the fields and plowed under. Commercial fertilizer, containing mineral plant food, is bought every year by many farmers and put on their land.

Rows of corn usually are planted three feet apart. If the rows run up-and-down the slopes, even the gentle slopes, there is a good chance for some of the top soil to be washed away during every heavy rain. That was the old way of planting. Year by year more farmers in the corn country now use their fields in ways that help to keep down soil wash and also help to keep up soil fertility (p. 99). The better farmers of today work in all ways for larger yields of better corn.

Where the corn goes. It is a common saying that "most of the corn goes to market on four feet." This is true, for most of it is fed to hogs and cattle right on the farms. When



Each dot stands for 10,000 acres

Figure 141. Where the corn is grown



Each dot stands for 5,000 hogs

Figure 142. Distribution of hogs



Each dot stands for 1,000 cattle

Figure 143. Distribution of beef cattle

large enough and when fattened, the animals are sold.

The three maps on this page suggest a close connection between corn, hogs, and cattle. The corn belt, the area where most corn is grown, is also the hog belt. There are more beef cattle in part of the corn belt than in many grazing lands of the western plains.

In early days, cattle were driven long distances to be fattened for market (p. 39). Now great numbers of them come in cattle cars on railroads to the corn belt to be fattened. Many more are raised in the corn belt.

The pictures on the next page show feeding grounds on two corn-belt farms. It was September. Behind each of the feeding grounds, corn stands full-grown in the fields, ready to be harvested. It will be stored in big corn cribs or in fenced pens. Much of it will be fed to stock during the autumn and winter. Such farmers as those in the pictures have much to do throughout the year.

Though most of the corn crop is fed to hogs and cattle on farms, much is fed on farms to horses and to poultry. Some is fed to stock not on farms. Corn is also used, of course, as human food. Some kinds are eaten as "green corn." Some is used in making corn meal, corn starch, and other food products. But most of the corn, by far, that reaches the table goes there in the form of meat.

Dairy farming. A region with many cities also has many dairy farms. City people must have milk (p. 113). In the North-Central States there are most dairy cattle, in general, in a belt running from northern Ohio and southeastern Michigan westward into northern Iowa and southern Minnesota (Fig. 87). Several very large cities—Cleveland, Detroit, Milwaukee, Chicago—and many smaller cities are in this dairy belt. It is near the northern edge of the corn belt (Fig. 141), where much hay also is grown. The dairy farmers feed their cows more silage than dairy farmers do in the Northeast, but they also feed much hay.

The picture in Figure 146 shows part of a



Figure 144. Feeding hogs

Arthur Rothstein

Figure 145. Feeding cattle

Arthur Rothstein





Figure 146. On a dairy farm in southeastern Minnesota

Courtesy United States Department of Agriculture

small dairy farm in a hilly section in southeastern Minnesota, near the Mississippi River. It was early autumn. The slope in the foreground had been used during the summer for the two main crops, corn and hay, grown by the farmer. Along the foot of the slope is a nearly level strip of standing corn. This will be cut to fill the silo behind the barn. Just above the corn is a strip of meadow on which grass was grown for hay. The hay has been stored in the barn. The meadow strip is now being plowed for another crop.

Farm boys learn all about machinery when young, and help their fathers in many ways. Dairy farming is busy farming. There is always something for every one to do. Perhaps, though, the young farm boy on this plow is just having his picture taken. The plow has two strong lights, like the headlights

on an automobile. The boy's father can plow at night, if he needs to.

Mixed farming. Most farming in the North-Central States is mixed farming. On most of the farms, several crops are grown each year. In most of the fields of almost any farm, different crops are grown in different years. The crops are rotated. In general, the mixed farming is stock-and-grain farming.

Even in the corn belt, millions of acres are used for winter wheat (autumn-sowed wheat). A comparison of the maps in Figures 141 and 147 will show this. Not much spring wheat, Figure 148, is grown in the North-Central States, except in Minnesota. Wheat is sowed there in spring because autumn-sowed wheat would be killed by the winter cold.

There is, of course, modern machinery for planting, harvesting, and threshing wheat.

This machinery is so made that it can be used on the same soil for either small grain. Binders cut wheat or other grain and bind it into sheaves. In recent years tractors have been used more and more, instead of horses, to pull the improved binders now in general use. A single threshing machine may serve a number of farmers in a neighborhood. This machine shells out the grain and runs it into sacks. It also blows the straw and chaff out through a blower or stacker. Years ago steam engines always were used to run threshing machines. Now, gasoline engines commonly are used.

Of course, various crops other than corn and wheat are grown on most of the mixed farms. Hay is one of them. Oats is another. Still others grown on many farms are barley and rye. There are many crop combinations in "stock-and-grain farming."

Farm villages. There are thousands of farm villages on the railroads and highways of the north-central region. In the main farming sections, the villages are only a few miles apart—perhaps eight or ten. In many ways each village is a part of the farm life of its neighborhood.

This close connection of a village with the surrounding farms may be shown by pens for stock at the railroad siding, by a grain elevator (Fig. 149), by a farm-implement store and a repair shop, and in other ways.

In a small farm village, the "main street" may be the only business street. A gas station, one or two groceries, a "general store," and a drugstore may complete the short list of businesses. Of course, farm villages differ in these matters and in their size. Some of them are really little cities, with many improvements. But one thing they all have in common, regardless of size. They live on their country trade.

The elevator in Figure 149 is a farmers' cooperative elevator. It is used for wheat, but is in the very center of the great corn lands of Iowa. The steel bins in the fore-



Figure 147. Where winter wheat is grown



Figure 148. Where spring wheat is grown

Figure 149. In a farm village

Farrell Lee





Figure 150. Cultivating soy beans

© J. C. Allen and Son

ground of Figure 138 are on the edge of a small farm village, not shown in the picture. These bins are used for the temporary storage of corn that is to be sent away by rail or truck. Corn spoils if kept long in a closed space. These bins have good ventilation.

Scattered glimpses. In the future, the plants shown in Figure 150 may be grown on many more farms than now in the North-Central States. These plants are soybeans. The seeds have high food value, and year by year more soybean flour is made. Oil from the seeds is used in making paint, soap, and many other things. Soybeans, like corn, need frequent cultivation. From time to time new crops gain favor in particular areas, or old crops lose favor.

Truck farming is important near the large cities, of course, even though city markets can now get fresh vegetables from distant parts of the country.

Several sections of the northern interior are famous for certain fruits. One of these sections is in southwestern Michigan, near Lake Michigan. Apples, peaches, bush fruits, and grapes are grown there. Because of the lake, the danger of spring and autumn frosts that harm fruit crops is less than in many places. The long, narrow peninsula in Wis-

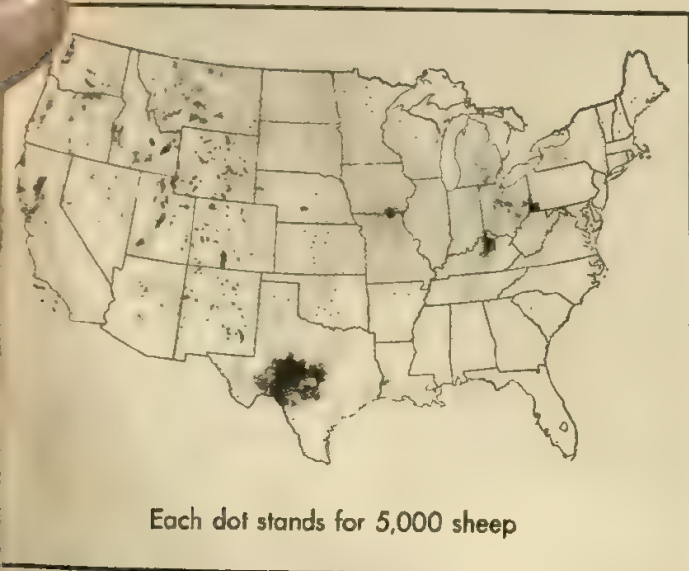


Figure 151. Distribution of sheep

consin that extends into Lake Michigan is famous for cherries. Southern Illinois and parts of Missouri also have many fruit farms.

In the hillier, rougher parts of Ohio there are very many sheep (Fig. 151). In a part of southern Wisconsin much tobacco is raised. A small area in southern Michigan is widely known for the celery it grows. Other things, as different one from another as sheep and tobacco and celery, are specialty products in parts of this great farming region.

Commercial farming. In these days, almost all farming in the North-Central States is commercial farming. The farmers of all kinds produce things in order to sell most or all of them. The man who carries on mixed farming may sell very little or no corn, but he sells the hogs and cattle to which he feeds his corn. He sells his wheat and other small grain. The dairy farmer sells his milk, the truck farmer his vegetables, the fruit farmer his fruit. The modern commercial farmer need not even grow food for his own family. He can sell his stock or crops and buy whatever his family needs. He enjoys great advantages over the pioneer farmer of early days (pp. 39-40).

But the modern commercial farmer must be a good business man to succeed. In a given year shall he, for instance, increase or decrease the number of acres he has used for this product or that product? In answering this question he must, among other things, estimate later market demands and prices. And later he must watch changes in prices from day to day, in order to sell, if he can, at the best time. Will it be wise to buy some new, expensive machinery now, or better to get along for another year with the old machinery? Plans covering many things must be made carefully, and well in advance. It is easy to see that a modern commercial farmer is a business man, just as truly as a storekeeper in a city.

Commercial farmers of all kinds are trying not only to get more and better products

but also to satisfy the demands of city buyers. Experts in government bureaus, agricultural colleges, and experiment stations are helping the farmers. These experts are trying, for instance, to breed chickens with more white meat, smaller turkeys, and pigs with ten-pound hams.

Country life without farming. Many people in the North-Central States who do no farming have homes in the country. Northern Michigan, Wisconsin, and Minnesota is a land of lakes and woods where the summers are cool. It is a great vacation land for people from towns and cities farther south.

Things to Remember about our Country

1. *"Many farms in the corn country are worked without horses."* Name some of the horseless machines that are used. Describe the work done with these machines.
2. *Weather has much to do with yields of corn.* What kind of weather is best for corn when it is growing fast? Why is July "the month of worries" for corn growers?
3. *Farmers are trying in various ways to get larger yields of better corn.* In what ways?
4. *"Most of the corn goes to market on four feet."* What does this mean?
5. *"Dairy farming is busy farming. There is always something for every one to do."* Make a list of the many kinds of things to be done. You may be helped by reading once more about dairy farming in Northeastern United States.
6. *"Most farming in the North-Central States is mixed farming."* What does mixed farming mean?
7. *"There are thousands of farm villages on the railroads and highways of the north-central region."* What would you expect to see in one of these farm villages?
8. *Successful commercial farmers must be good business men.* Tell why.

Exploring and Finding for Ourselves

What cities with more than 500,000 people depend partly on the farm products of this region (Fig. 133)? What ones with 100,000 to 500,000 people?



Figure 152. Flour mills at Minneapolis

J. A. Vachon



Figure 153. A soap factory at Cincinnati

Howard R. Hollem



Figure 154. Stock yards at Chicago

© Ewing Galloway

Work in the Cities

A great manufacturing belt. Work in the cities of the North-Central States is of many kinds, just as in the cities of the Northeast (p. 127). Trade and manufacturing are the most important kinds of work in both groups of cities. Taken together, these cities form a great manufacturing belt. This belt stretches from the Atlantic Ocean to the Mississippi River. Throughout the belt, raw materials and markets, means of transportation and means for developing power, capital and labor, all are abundant. These are the things on which manufacturing depends (p. 125).

One among many. In a large city, hundreds of different things may be made. The city may be known best, however, for some one of its many products. Leading industries in three cities are suggested by the pictures on these two pages. Each of these industries,

like the leading industries of other cities, is a story in itself.

Minneapolis and flour. Minneapolis and St. Paul, Minnesota, stand side by side (Fig. 133). Long ago they began to be called "The Twin Cities." St. Paul had the advantage of being at the head of navigation on the Mississippi. Minneapolis had the advantage of water power. Manufacturing proved more important than river trade. Minneapolis outgrew its twin.

As late as 1870, there were no farmers in westernmost Minnesota or the easternmost Dakotas—now the heart of the spring-wheat country (Fig. 148). Soon after, pioneer settlers found that a fine grade of wheat could be grown there. Farmers flocked to the area.

In 1876, Congress voted money to build a wall behind the falls in Minneapolis. The wall was needed to prevent erosion and to increase the flow of falling water. Soon, too, a railroad was built from Minneapolis to the

new wheat lands. Flour mills were built close to the falls. They had to be close, for in those days water power could not be made into electricity which, in turn, could reach mills and factories by means of wires. And there was no coal near Minneapolis to use in steam mills.

By 1881, the falls furnished power for 28 flour mills, and also for 17 lumber mills. Minneapolis was near the forests of northern Minnesota as well as near the wheat lands of western Minnesota. The city grew rapidly. It became the greatest flour-manufacturing city in the country.

Of course, Minneapolis has outgrown its falls. Many other places also make much flour. Buffalo now leads in the industry (p. 123). Minneapolis is second in some years, third in others. Its big flour mills are still crowded together along the river, as the picture in Figure 152 shows.

A big industry at Cincinnati. Soap is so common and necessary that life without it can scarcely be imagined. In early days, women saved fat drippings from their cooking. They boiled this grease with soda they got by pouring boiling water over wood ashes. In this way they made soap for their families.

In 1837 two young men from the British Isles started in business together in Cincinnati. They began to manufacture soap. They made it in much the same way that housewives used. They peddled their soap through the streets in a wheelbarrow. Cincinnati was a good place for their business. They could get plenty of fat from the meat-packing houses of the city (p. 44). They could ship soap to other river towns by boat. Up and down the Ohio Valley population was increasing rapidly. Year by year more people needed more soap.

The little business started by these two soap-makers more than a century ago is a huge business today. Figure 153 shows part of the main plant of the company in Cincinnati. The company also has plants in

many other places. And soap-making is now very scientific. New materials and new methods are in use. New products are made.

Chicago and meat-packing. In the old "steamboat days" on the rivers, Cincinnati was the leading pork-packing center of the country (p. 44). Other places on the Ohio, Mississippi, Illinois, and Wabash rivers also had a smaller part in the business. It was widely distributed.

By 1861, Chicago took the place of Cincinnati as the leading meat-packing center (p. 65). The business declined in all the river towns. There were savings in doing the work in a small number of large plants, rather than a large number of smaller plants. Chicago had become the greatest railroad center. It had the best means of any city for collecting stock. It was on the northern edge of the corn belt, which already was taking shape. It was soon within reach by rail of the cattle country of the Great Plains (p. 67).

As years passed, more and more of the waste products of the big slaughter houses at Chicago could be used. Among the things made with these products were soap, candles, glue, glycerine, ammonia, knife-handles, and fertilizer. The list of such "by-products" became a long one. It got to be a common saying that nothing was lost from a hog but the squeal.

Chicago still leads in the meat-packing industry, though again many other places have packing plants. These places are railroad centers that have good locations for getting stock and for shipping products. Many of the plants in the other cities are owned and run by the big packing firms of Chicago.

Most people when visiting Chicago for the first time want to see the stock yards. They are famous everywhere. The picture in Figure 154 is a view of part of them.

There is much to see in Chicago besides the stock yards, as the next picture may suggest. There are huge stores, and factories that cover many acres. There is a great sys-



Figure 155. The lake front of downtown Chicago

© Chicago Aerial Survey Company

tem of parks and boulevards. There are museums, an aquarium with many strange fishes, and a planetarium with a great model of the heavens. Just outside the city there is a famous Zoo. It would take much time to see everything. Among American cities Chicago is second in size only to New York, and it covers much ground.

Figure 155 shows how part of downtown Chicago and its lake front look from an airplane offshore. The view is toward the southwest. The drive along the edge of the water in the foreground is part of an "Outer Drive" that follows the shore for many miles along

the front of the city. Following this drive to the left and upward in the picture, the eye comes to the "Outer Bridge," by which the drive crosses the mouth of the Chicago River. To the right the narrow river is lost to sight in a short distance behind the buildings along its bank.

Beyond the Outer Bridge in the picture is a sheltered harbor for pleasure boats. To the right of this harbor and the section of the Outer Drive which borders it is Grant Park. This beautiful park is the front yard of the main business district. This district is partly shown by the tall buildings farther to the

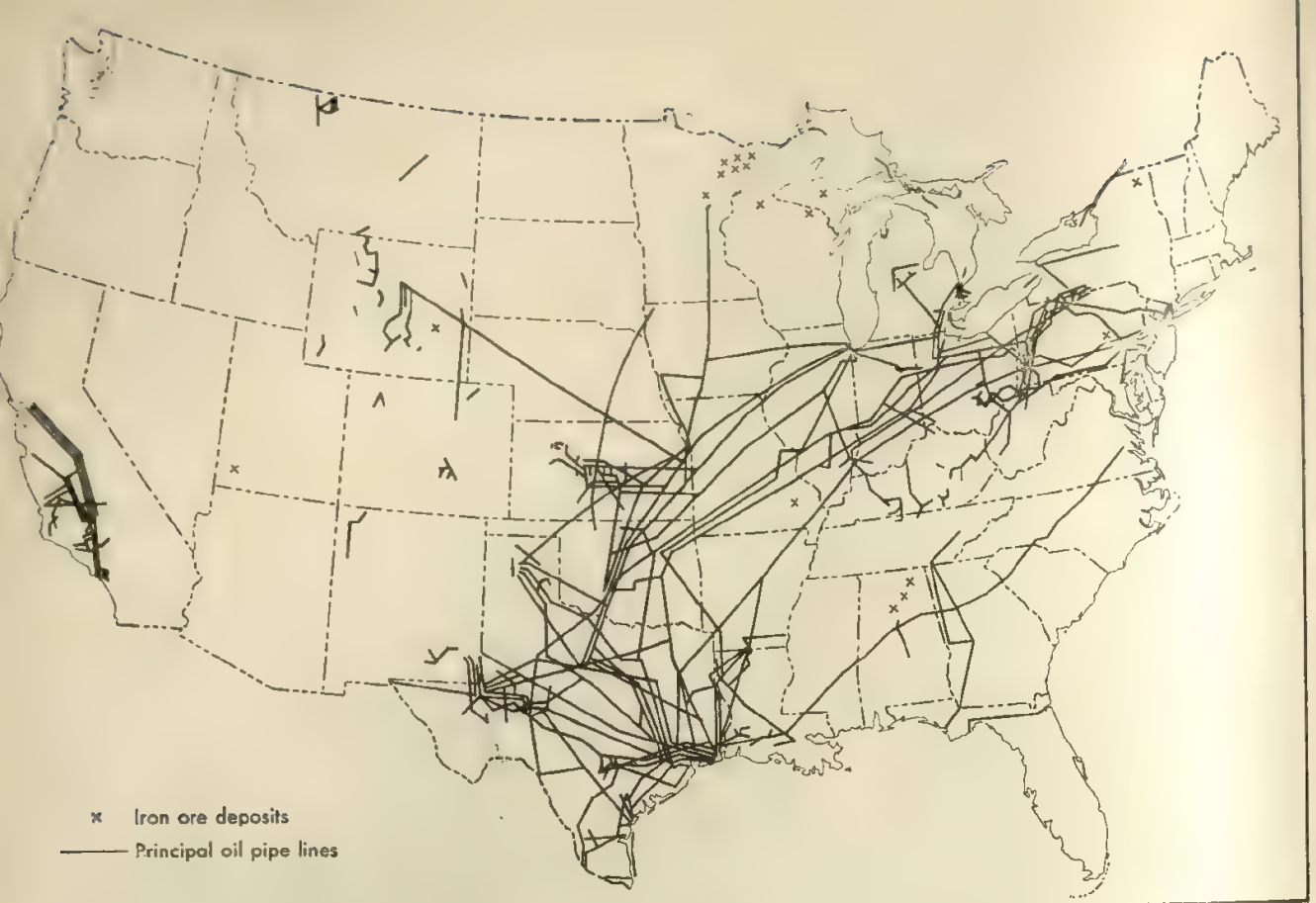


Figure 156. Main iron ore deposits and oil pipe lines

right A famous street, Michigan Avenue, separates the edge of the business district from Grant Park. The buildings facing Michigan Avenue and Grant Park in the picture include the largest hotel in the world, huge office buildings, and stylish shops of many kinds.

The landward end of the "Navy Pier" may be seen between the Outer Bridge and the lower left-hand corner of the picture. This pier extends out into the lake for about half a mile. The outer end of the pier has been used for amusement purposes.

A little beyond the harbor for pleasure boats, close to the upper right-hand corner of it in the picture, is one of the great museums already mentioned. Just beyond the museum building is Soldier Field, a stadium that can seat 100,000 people. To the left of the museum and just beyond the pleasure harbor is the aquarium. Some distance to the left of the aquarium, in turn, is the

planetarium, on a man-made island. All of Grant Park, too, is on land made by filling in the edge of the lake. And all Chicago, like the part of the city in the picture, stands on almost level land.

More manufacturing cities. From one of the tall buildings facing the lake in Figure 155, one might watch loaded ore boats from the upper lakes passing Chicago on their way to South Chicago or to Gary, Indiana (Fig. 133). The iron deposits from which the ore comes are shown near Lake Superior on the map in Figure 156.

The picture at the top of the next page shows one of the huge boats at the ore docks in Gary. This city was built years ago on waste land covered with sand dunes. It was laid out by a steel company as a place for making iron and steel. The things needed to manufacture iron and steel are brought together conveniently at Gary. There are coal mines not very far away in Illinois and In-



Figure 157. An ore freighter at a dock in Gary

© Robert Yarnall Richie

diana. The plants also are near the great market for iron and steel in Chicagoland.

There is an endless procession of ore boats going back and forth, up and down the Lakes, throughout the navigation season. Some of them run to steel mills in Cleveland. Figure 158 shows a part of the "Industrial Flats" at Cleveland, along the narrow river that cuts the city in two. Beyond the river are the tall

chimneys of some blast furnaces. The automobiles parked in the foreground belong to workers in one of the steel plants. The freight boat which a tug at the left is pulling upstream is bringing in a cargo of scrap iron from automobile factories in Detroit.

Greatest iron-ore mine. The greatest of the ore mines that feed the steel plants is shown in the drawing on the next page. It

[173]

Figure 158. Steel mills along the river at Cleveland

© Charles Phelps Cushing



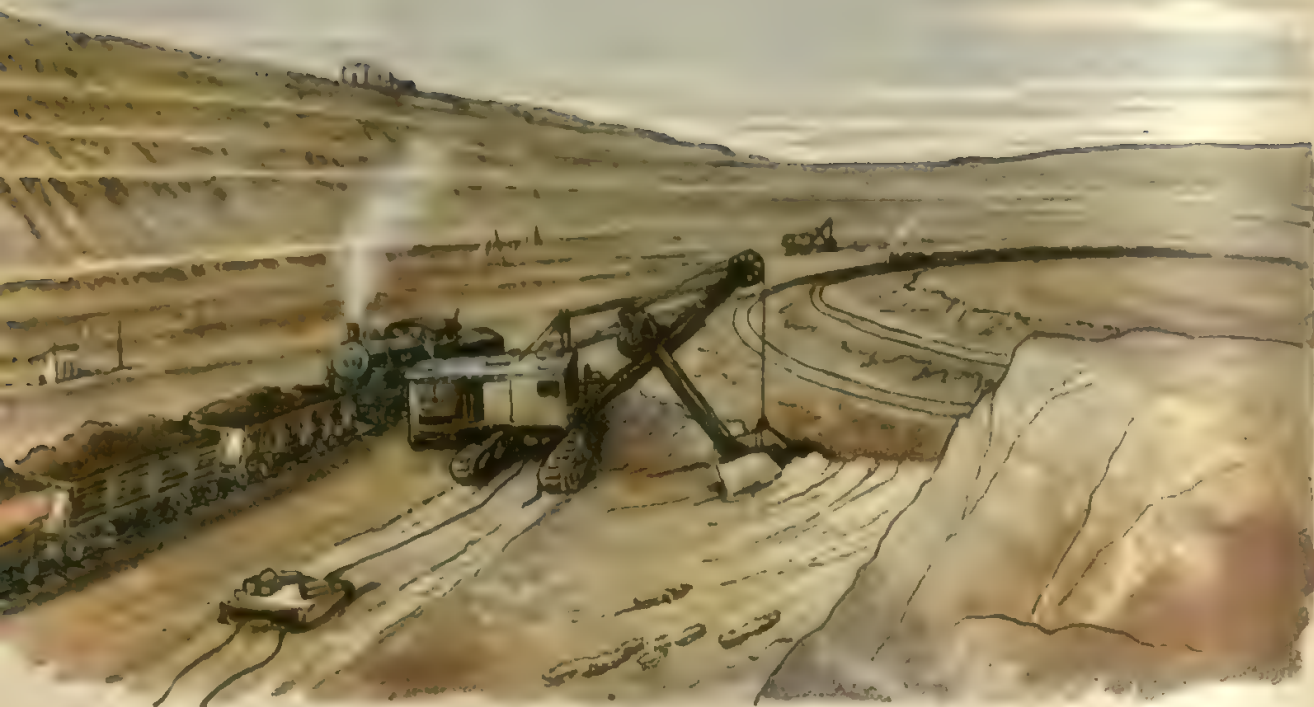


Figure 159. A huge open-pit mine near Duluth

is an open-pit mine in northeastern Minnesota, about 70 miles northwest of Duluth (p. 154). This mine is a thrilling sight, as the drawing suggests.

Great shelves of reddish-brown earth reach all around the huge pit. These shelves make a spiral roadway from top to bottom. Now and then a train of empty cars moves down this roadway to the bottom of the pit. Big steam shovels scoop up the ore and fill the cars. Each shovel picks up several tons of ore at one bite. The loaded train winds slowly up the spiral roadway out of the pit, and starts for Duluth.

At Duluth, the train runs out on a very high dock where the ore is dumped into large bins. From the bins, the ore runs down through spouts into an ore boat alongside.

Elevators of water. The level of the water in Lake Superior is higher than the level of the water in Lake Huron. And there are swift rapids in St. Marys River, which joins the two lakes. Ore boats and other boats could not pass back and forth between these

lakes were it not for the Soo canals (Fig. 133).

The original Soo Canal was opened on the American side of the river in 1855 (p. 60). It was greatly enlarged later. There is also a canal on the Canadian side of the river. The drawing on the next page shows a boat in the American canal.

Boats are lowered or raised about 20 feet in passing through one of the canals. This is done by means of a "lock." The lock is a part of the canal which is walled off so as to make a huge tank. The lock, or tank, has a gate at each end. The gates can be opened and closed. When the gate nearest Lake Superior is open, the water in the lock is at the same level as the water in the river above the rapids. A boat from Lake Superior then enters the lock. The gate behind it is closed. Water from the lock is gradually let out, and the boat is lowered to the level of the river below the rapids. The lower gate is then opened, and the boat leaves.

For boats going into Lake Superior, the process is just the opposite. The water in the

lock has been lowered to the level of the river below the rapids and the lower gate is open. A boat enters. The gate is closed. Water is gradually let into the lock until the rising water lifts the boat to the level of the river above. The upper gate is then opened, and the boat moves out of the lock.

The canal locks are like giant "elevators." Boats can be lowered and raised in them at will. They make possible the great traffic on the Lakes.

The big inland city. The largest city of the north-central region that is not on the Great Lakes or the Ohio-Mississippi waterway is Indianapolis, Indiana. The land on which the city stands was chosen as the place for the state capital a few years after Indiana was admitted to the Union. In this way the city got its start.

Indianapolis, the capital, was near the center of the state. It became an important railroad center, Figure 133, and the main business center of a rich farming region. It

became an important manufacturing center, too, but no single industry gained outstanding leadership. The many kinds of factories in the city are more striking than the importance of any single kind. In this, Indianapolis differs from many cities.

Still more manufacturing. Big cities are by no means the only manufacturing places in the North-Central States. Almost every one of the smaller cities shown on the map in Figure 133 is well-known for some product. Some places not shown on the map are also well-known.

Rock Island and Moline, Illinois—on the Mississippi opposite Davenport, Iowa (Fig. 133)—make farm machinery. Together with Chicago, they lead in the industry.

Pullman, just south of Chicago, makes the sleeping cars used on all American railroads.

Whiting, Indiana, between Chicago and Gary, has huge oil refineries. The pipe lines that bring the crude oil are shown in Figure 156.

[175]

Figure 160. Passing through the Soo Canal





Figure 161. A big automobile plant near Detroit

Courtesy Ford News Bureau

Grand Rapids, Michigan, is famous for the furniture it makes.

Flint, east of Grand Rapids, is an automobile manufacturing city.

In Dayton, Ohio, cash registers are made.

Akron, Ohio, makes more rubber tires than any other place.

Youngstown, Ohio, is a steel center.

Many places in Minnesota have butter factories. Many in Wisconsin have cheese factories. In fact, Minnesota leads all the states in the production of factory butter. Wisconsin leads in cheese.

In the northernmost part of Minnesota, Wisconsin, and Michigan there are, of course, fewer people, fewer towns, and fewer industries than farther south. Some sawmills still cut timber from the remaining forests. They recall a great industry of earlier days.

Both old and young. Detroit is the oldest city on the Great Lakes (p. 62). It is the youngest giant city—the latest to join the small group of cities with more than two million people. The automobile industry made this old city young again, made it big and strong.

Part of the present plant of the first big automobile company in Detroit is shown in

the picture above. There were other places where the founder of the company might as well have begun to make automobiles. He chose Detroit. He succeeded, and Detroit gained the great advantage of “a head start.” It is still the “capital” of the automobile world.

The heart of Detroit, Figure 162, is close to the river which gave the city its start. Elderly people there remember when they could walk back from the river to the end of the stores and offices on the main business street in just a few minutes. They remember when streetcars drawn by horses were the only cars on streets now crowded with automobiles. They have seen Detroit re-made.

How things and people are tied together. The automobile industry shows how the life of the country is tied together. This industry is the best customer of the steel industry. In turn, the steel industry is the best industrial customer of the coal-mining industry. The automobile industry takes three-fourths of the nation's output of plate glass, three-fourths of the rubber, two-thirds of all upholstery leather, one-third of all lead, one-tenth of all copper.



Figure 162. Modern heart of an old city

© Fairchild Aerial Surveys, Inc.

The workers in the automobile industry itself, those having money in it, and those providing raw materials or articles for its use—on farms, in mines, in forests, and in other mills and factories—are members of one out of every seven American families.

The American people have been called a nation on wheels. There are enough automobiles and trucks in the country to hold the entire population at one time.

All people who build cars and all people who use cars have interests in common.

Things to Remember about our Country

1. *The cities of the North-Central States form the western part of a great manufacturing belt. What other cities are in this belt? On what things, in general, does manufacturing in all these cities depend?*

2. *"In a large city, hundreds of different things may be made. The city may be known best, however, for some one of its many products." Name leading industries of five large north-central cities.*

3. *Each of the leading industries in a large manufacturing city is "a story in itself." Tell the story of flour-making in Minneapolis, soap-making in Cincinnati, and meat-packing in Chicago.*

4. *Almost every city shown on the map in Figure 133 is well-known for some product. What kind of product is suggested by Grand Rapids? Flint? Dayton? Akron?*

5. *All the people who are engaged in any important kind of work in our country are dependent on people engaged in many other kinds of work. Use the automobile industry to show the interdependence of its workers and workers in the steel and coal-mining industries.*



Figure 163. In a grapefruit orchard

Great Plains States

Some pictures and a map. The men in the picture above are picking grapefruit near Brownsville, Texas. Brownsville is farther south than any other place on the map in Figure 164. It is farther south than any other place in all the United States (Fig. 7), except the tip of Florida. The temperatures near Brownsville are good for such crops as grapefruit, but there is not enough rain for them. So the orchards and fields are irrigated with water taken from the Rio Grande. This river is the boundary between Texas and Mexico.

The picture in Figure 165 was taken in North Dakota (Fig. 164), near the Canadian border. It was summer time, in a very dry year. Some cattle had gathered around a little water hole at a windmill. All the water holes in the grazing lands were drying up. There was little water in the wells. Day by day the grass was getting thinner.

Many villages on the Great Plains are no

larger than the one in Figure 166, and look much like it. This village is in the north-central part of North Dakota. The grain elevators along the railroad show that the village is a shipping point for near-by farmers. Of course, it is also a place where the farmers buy supplies. When crops are good, business in the little village is brisk. When crops are poor, business is dull.

Figure 167 is a scene at harvest time in central Kansas (Fig. 164). Plenty of rain-fell at the right time for the growing plants, and so the wheat crop is a big one. Soon the grain dealers of the village in the distance will be shipping the wheat away.

Figure 168 shows a kind of work on the Great Plains that is not widespread, as are farming and grazing, trading and shipping. Each of the tall frames in the picture stands over an oil well. Such frames are called oil derricks. These derricks are in an oil field

in eastern Oklahoma (Fig. 164) There also are oil fields in Texas, Kansas, and Wyoming. In some places the oil wells are closely surrounded by grain fields or pastures.

The big sugar factory in Figure 169 is a few miles north of the city of Denver, Colorado (Fig. 164). Sugar beets are piled high near the factory. The beets were grown near-by, on irrigated farms. Many manufacturing plants in the Great Plains use products of the farms and ranches.

These six pictures tell things about life and work at places far apart on the Great Plains. More is said later about some of the things they show.

Open spaces. Most of the Great Plains is a land of vast, open spaces. The picture in Figure 165 shows only a small part of the sky line. But looking in any direction the land there would seem almost as flat as a floor, as far as the eye could see. So it is over much of the Great Plains. On a clear day the smoke from an engine on a railroad may be seen 20 or 25 miles away. Many roads run in straight lines for miles and miles, with little change in level.

Of course, not all parts of the Great Plains are nearly flat. Some parts are rolling, like the land in Figure 166. Some are hilly and rough. A few are mountainous. The famous Black Hills (Fig. 164), in South Dakota and Wyoming, rise 2000 to 3000 feet above the plains around them.

Parts of the plains are uneven, too, because of valleys. There are a few great valleys, made by large rivers that flow from the Rocky Mountains. Most of the valleys are much smaller. Many of them were cut by streams that flow only in wet weather.

In spite of the hills and valleys, most

Figure 164.





Figure 165. When grass was thin and water scarce

Arthur Rothstein

of the Great Plains is a nearly level land that slopes eastward very gently from the Rocky Mountains toward the Mississippi River. It is the light, uncertain rainfall, not the surface of most of the land, that has interfered with farming and ranching.

East and west. Winds that reach the Great Plains from the Pacific Ocean have dropped most of their moisture in the high mountains of the West. Wet winds from the Gulf of Mexico move north and northeast. They miss most of the Great Plains. So the average amount of rain that falls in a year is less and less toward the west, all the way across the plains (Fig. 88). Partly for this reason there are many differences between the eastern and western parts of the Great Plains.

The eastern part is a land of farms. The western part is mostly a land of ranches. Most of the eastern farm land is used for crops. Most of the western ranch land is used for grazing stock. In the eastern part very little land is irrigated, though in some years

withering droughts cause crop failures. In the western part more land is irrigated. In the east many farms contain 160 acres or less. In the west few ranches contain less than 1000 acres. Some ranches contain many thousands of acres.

There are more people, more cities, and more large villages in the eastern part of the region than in the western part. The railroads and highways are closer together in the eastern part. More trading and manufacturing are carried on there.

No sharp line divides the Great Plains into an eastern part and a western part. Most of the changes from one part to the other are gradual. But anybody would recognize either part easily at most places well inside of it.

Farming without irrigation. Most farmers in the eastern, rainier part of the Great Plains grow several crops. This kind of farming is mixed farming, like that farther east (p. 164). In mixed farming the same amount of land



Figure 166. A farm village of the northern Great Plains

John Vachon

and the same fields are not, of course, used year after year for the same crop. Instead, crops are rotated. Corn (Fig. 141), wheat (Figs. 147 and 148), and cotton (Fig. 128) are leading crops over great areas.

Corn is grown on some of the land as far west as there is rain enough. It is grown as far north as the temperatures and the length of the growing season permit. In the Dakotas some corn is grown for forage or is cut for fodder if the grain cannot ripen before the frosts of autumn.

Wheat grows well in areas that are too dry and too cool for corn. So wheat is grown farther west and farther north than corn. Most of the farmers who tried in the past to grow crops without irrigation on the western plains were wheat farmers (pp. 68-69). In some years there was not enough rain even for wheat. The farmers took big chances. Farmers in the drier, western part of the Great Plains still take big chances unless their land is irrigated.

Wheat sowed in the autumn, called winter wheat, usually gives larger yields to the acre than wheat sowed in spring. But winter wheat would be killed by the cold that is common every winter in the northern plains. So in North Dakota, South Dakota, and Montana wheat is sowed in spring. Though the growing season is shorter there than farther south, the summer days are long and many of them are hot. The wheat grows rapidly. Much of the rain usually comes when most needed, in spring and early summer.

In Kansas, Oklahoma, and Texas there is little or no danger that wheat will be killed in winter. In those states, wheat is sowed in the autumn. The wheat harvest begins at the south of course, and moves northward. Most wheat farmers, like those in Figure 167, use labor-saving machinery.

At the south, cotton is grown much farther west in Oklahoma and Texas than would have been possible years ago. This is because some new kinds of cotton plants need less



Figure 167. A good year in the Kansas wheat lands

rain than the old kinds. "The land of cotton" now reaches far into the Great Plains.

Irrigation farming. The irrigated lands of the Great Plains are shown on the map in Figure 175. Most of them get water from rivers that flow east from the mountains. Some lands are irrigated from deep wells.

Many crops are grown by irrigation. Some, such as grapefruit (Fig. 163), can be grown only in the extreme south. Others, such as sugar beets (Fig. 169), are grown as far north as Montana. Alfalfa is grown even more widely than sugar beets.

Much alfalfa is sold by irrigation farmers to near-by ranchers for their cattle or sheep. Some of the irrigation farmers buy cattle or sheep from ranchers, and during the winter fatten the animals for the spring market. In such ways the farmers and the ranchers help one another.

Ranching. The cattle ranchers and sheep ranchers of the western plains, like the dry-

land farmers, take chances with the weather. Too little rain may fall in spring and early summer for the grass to grow well. Before long there may be neither grass nor, in places, enough water for the stock. During the summer when the picture in Figure 165 was taken, stockmen anxiously watched the sky and hoped in vain for rain. Many animals perished. In some areas the ranchers had to reduce the size of their herds or flocks by three fourths for want of feed and water.

One might think that ranchers would be glad to have rain at any time. But every rain that falls after the grass is full grown and dry washes some of the richness out of it. If many rains come in the autumn, the natural hay of the pastures may be damaged greatly.

In most years cattle can graze in winter, even in the northern pastures (p. 68). But sometimes a coating of ice covers the grass. Sometimes, too, heavy snow keeps the cattle



Figure 168. Oil wells in Oklahoma

from getting at the grass. If there were no other feed, many of the animals might die.

There are risks, then, in every season. The risks are greatest if ranchers depend entirely on the natural pastures. That is one reason why many ranchers grow alfalfa and other feed crops on some of their land. In that way they reduce the risks. In that way they can usually raise more stock and better stock. Their ranches are really pasture-and-crop ranches.

Up from below. The most important mineral deposits under the Great Plains are the deposits of oil mentioned on pages 178-179.

Most oil fields look much like the one above. They all have many tall derricks. Once every well was made with tools that were dropped, again and again, by a cable. In this way, a hole was punched into the earth. Now, nearly every well is made with a drill that is turned by machinery. As the drill turns, it grinds its way into the earth. Perhaps no

oil is found. Perhaps oil spurts out in a big stream. Perhaps it has to be pumped out. Whether a well yields much oil or little oil at first, it gives up less and less in time. Finally, the well has to be abandoned. A well may furnish oil for only a few months or it may do so for 25 years or more.

Some oil is taken away from the oil fields in tank trucks or in railroad tank cars. Most of it flows through oil pipe lines to refineries or to shipping points on the coast. The pipes, made of iron, run up hill and down, along lines as nearly straight as possible. They are put a few feet under the surface of the ground. They are covered with asphalt or something else to keep the iron from rusting.

Along each pipe line there are pumping stations, about 50 miles apart. At each station powerful pumps force the oil on its way. The longest pipe lines, Figure 156, reach from oil fields in Oklahoma and Texas to places near New York City and Philadelphia.



Figure 167. At a beet-sugar factory near Denver

Missouri River cities. The largest cities in the eastern part of the Great Plains are on the Missouri River. They are Kansas City, Missouri; Kansas City, Kansas; and Omaha, Nebraska (Fig. 164). The first two are "twin cities." They have separate city governments, of course, for they are in different states. But in most other ways they are really one city. The two are often called "Greater Kansas City," or just Kansas City.

Although the Missouri River was never a great highway like the Ohio (pp. 41-42), it helped Kansas City. This was because Kansas City is at the great bend in the lower river, where it turns sharply toward the east. So, as the map shows, it is the place on the river nearest to all the great Southwest. In early days, steamboats ran up the Missouri to Kansas City. Westward from Kansas City great overland trails led out across the plains (pp. 66, 79). At this town on the great bend of the river, many westbound people and much freight shifted from boats to wagons. Kansas City was another "gateway." It is now a far greater gateway, though of course railroads and highways have taken the place of the river and the trails.

Omaha owed its growth to the first trans-continental railroad (pp. 26-27). Congress decided that the eastern end of the railroad should be on the Missouri River. The choice of a suitable point on the river was left to President Lincoln. He chose the place where Omaha stands. That choice made certain the growth of a city there. Omaha, unlike its older neighbor, Kansas City, always has been a railroad gateway to the West.

Kansas City and Omaha are both important manufacturing cities, largely because they are great traffic centers. The leading industry in both of them is the slaughtering and meat-packing industry. Both cities handle much wheat and make much flour. Kansas City is the largest market in the United States for winter wheat. One elevator there, owned by a railroad company, can hold ten million bushels of grain at a time.

Cities of the southern plains. The largest three inland cities near the southern end of the Great Plains are Dallas, San Antonio, and Fort Worth. They are all in Texas (Fig. 164). All of them are railroad, trading, and manufacturing centers. All do much business with large areas of farm lands and ranch lands. All

live stock raising and meat packing plants. San Antonio, farthest south, is a famous winter resort.

The "mile high city," Denver (Figure 154), is a mile above the level of the sea. So it sometimes is called the mile high city. It is the largest city in all the western part of the Great Plains. And so it sometimes is called the queen city of the plains.

Like the other large cities, Denver is an important railroad center. Like them, too, it is a center for slaughtering and meat packing. Unlike the others, it is near large areas of irrigated farm lands (Fig. 175). It is the capital of Colorado, a favorite residence city for Colorado people, and a great center for tourists.

Denver belongs to the mountains, close at hand, as well as to the plains. Most of the tourists who gather in Denver go to the mountains. Much of the trade of the city is with places in the mountains.

Looking ahead. Man cannot increase the rainfall of the Great Plains. He cannot prevent droughts. He can, though, save and use more of what rain there is. Dry-land farmers can do this by using their land in ways that will make more of the rain water soak into the soil (p. 99). They can, too, grow more crops that need little moisture. There are plants called sorghums, for instance, that require even less moisture than wheat and make good feed for stock. Much has been done already in such ways to save water and use it to better advantage. Very much more will be done.

Much water in the rivers that cross the Great Plains has always gone to waste. In time, this waste will be stopped. Congress already has determined to stop it on the Missouri River and its tributaries. More than 100 dams will be built on those rivers. The water to be stored behind the dams will irrigate nearly five million acres of dry land in seven states. Another half million acres, now irrigated but without enough water, will get

new supplies from the reservoirs. The trade, industries, and growth of towns near all the irrigated areas will be helped.

More water will be furnished to some cities and villages that do not now have enough for their people. Power plants at some of the dams will make a new and a great amount of electricity. It will be used in homes and factories in the mountains and in cities and villages. The reservoirs will be havens for wild life and centers for recreation. Every summer many people will visit them for boating, swimming, and fishing. The regulation of the rivers by the dams will help greatly to prevent floods. The "Floods of Missouri" is to be made at last a memory of the people. It is to be tamed and put to full-time work.

The plan for the Missouri River is a big one. In time, big plans will be carried out on the other main rivers of the Great Plains. The result will be a better and more living for many of the people.

Things to Remember about our Country

1. Most of the Great Plains is a land of great risk for settlers. Why? How have men tried to reduce the risk? What more can they do?

2. There are many differences between the eastern part of the Great Plains and the western part. Name all the differences you can.

3. Leading crops in the eastern, southern part of the Great Plains are corn, wheat, and cotton. Explain the general distribution of these crops in the Plains. You may be helped by reading again parts of earlier chapters that tell about the needs of these crops.

4. Many crops are grown by irrigation in the western, drier part of the Great Plains. Why is not a far greater amount of land irrigated there than is shown in Figure 175?

5. Many ranches on the Plains are really "pasture-and-crop ranches." Tell why.

6. Kansas City is the largest city in the eastern part of the Great Plains, Denver the largest in the western part. What advantages did each place have for large growth?



Figure 170.

Exploring and Finding for Ourselves

1. Wichita (Fig. 164), second largest city in Kansas, was at first a "cow town" (p. 67). What scenes do you think were then common in Wichita? Locate Wichita as closely as you can on the maps for winter wheat (Fig. 147) and

beef cattle (Fig. 143). Name various things that these maps suggest you might see in Wichita today.

2. What states shown on Figure 164 are crossed by the Rocky Mountains? These four states are partly in the Great Plains and partly in Western United States.



Figure 171. In a western wonderland

Ben Glaha, Bureau of Reclamation

Western United States

Western wonderland. Western United States, Figure 170, has much wonderful scenery. A famous mountain view in Wyoming is shown in the picture. Grand as this view is, it has many rivals. Hundreds of other rugged mountains also meet the clouds. Hundreds of other lakes, bordered by dark forests, also add charm to mountain views.

Deep canyons of many colors carry swift streams away from the high mountains. The Grand Canyon of the Colorado River in northern Arizona is a mile deep in places. It has no equal in all the world.

The western deserts have scenery as strik-

ing in its way as that in the mountains or the canyons. Some are drab, others brightly colored. One in Arizona is called The Painted Desert because of the many colors of its bare rocks.

This wonderland of mountain, valley, and desert joins the blue ocean in rocky cliffs and sandy beaches. They are always lovely, whether wrapped in fog or bathed in sunshine.

Playgrounds. Great numbers of people visit the West to enjoy its scenery and its climates. Most of the national parks are in the West. They are areas set apart by Con-

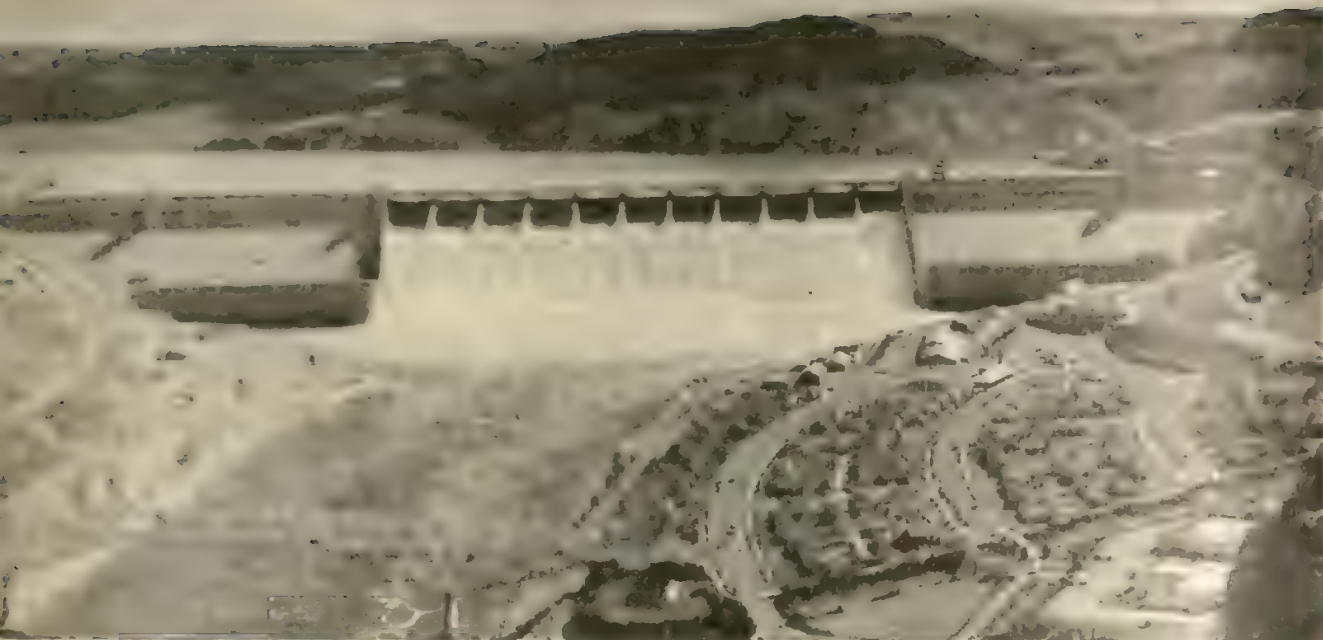


Figure 172. Grand Coulee Dam

Bureau of Reclamation

gress as playgrounds for all the people. When added up, the tourist trade is a big business. It amounts to several hundred million dollars a year.

People who live in the West take full advantage of their surroundings. They spend much time outdoors. Many of them can enjoy very different attractions within short distances. In southern California, for instance, it may be a trip of only an hour or two from a garden in the midst of palms and orange trees to a good place for skiing on a snow-clad mountain.

Of course, the mountains have much to do with life in the West quite apart from scenery and recreation. Above all they do much about water. And water is now the most precious natural resource of the West.

Mountains and water. In the West, mountains and water go together. The mountains catch most of the moisture in the damp winds that blow in from the ocean. The lower land on the east side of each high mountain range gets little rain or snow. In a way, then, the

great mountains have made the great deserts.

There is plenty of water in the high mountains, but little good land except in scattered valleys. There is plenty of good land outside of the mountains, but little rain except in some lowlands near the coast. Those lowlands get most of their rain in winter, when rain is needed least.

Wherever possible, then, lowland farmers and ranchers look to the mountains for the water they need. Each winter men go up into the mountains and measure the amount of snow which falls there. Then the farmers in the valleys and plains below can tell, in a general way, how much water they will have the next summer for irrigating their crops.

In the spring, most of the snow in the mountains melts. The streams that rise in the mountains carry the water away. There may then be floods in the valleys. Every year, too, much water from the mountains flows unused to the sea, past thirsty lands. That is why dams are built to store the water, the "new kind of gold" (p. 77).



Figure 173. Boulder Dam

Bureau of Reclamation

Improving on Nature

Biggest dam ever built. Figure 172 is a picture of Grand Coulee Dam, taken from downstream. The dam is at the place on the Columbia River marked on the map in Figure

170. The reservoir lake above the dam was named after President Franklin D. Roosevelt. It reaches up river for 150 miles to the Canadian boundary. The water coming over the middle of the dam is falling nearly 350 feet. It makes a waterfall twice the height of



Figure 174. From desert to garden

Bureau of Reclamation

Niagara Falls. There is enough concrete in this biggest of all dams to build both of two highways, one from Jacksonville, Florida, to Seattle, the other from Seattle to Denver. Each road could be a two-lane highway.

A million acres of dry land in central Washington will be irrigated with water from the lake behind Grand Coulee Dam. Sometime 300,000 people may live on the farms and in the villages of this big area, where now there are only about 10,000. A great amount of cheap electric power already is made at the dam. Almost all of it was used during World War II in manufacturing light metals used in making airplanes. In this way the great dam helped to win the war. Now the power is used in many ways.

The highest dam. Boulder Dam, Figure 173, is the tallest dam in the country. It is

almost 200 feet taller than Washington Monument (p. 101). This lofty dam closes up a narrow place in a canyon of the Colorado River, between Arizona and Nevada (Fig. 170).

Boulder controls the flow of the Colorado. It keeps the river from flooding rich farm lands below the canyons. It furnishes water for irrigation in the deserts of Arizona and California, down near the Mexican border. Boulder supplies nearly half of all the electric power used in southern California. It even regulates the supply of water which is piped from the river to Los Angeles (Fig. 170), nearly 250 miles away.

Other dams. Grand Coulee Dam and Boulder Dam are the greatest two dams on the greatest two rivers of the West. They were built by the United States Bureau of Reclamation. But they are only two dams

among hundreds that have been built in the West to capture runaway water. Many more will be built to capture more water for more dry land. Only water can change a desert into a garden.

From desert to garden. The picture in Figure 174 tells the story. It was taken near Yuma, Arizona (Fig. 170). Once all the land in sight was desert. Then the irrigation canal was dug to bring water from the Colorado River. Part of the land in the picture was irrigated. On some of the irrigated land a citrus orchard was planted. The land in the foreground has not been irrigated. It is still desert. So the picture is a record of the magical effect of water in an arid land.

Irrigated areas. The areas already irrigated in the West are shown on the map in Figure 175. Most of them are small. They are scattered widely. Sometime all the water that can be saved for irrigation will be used. The total amount of irrigated land will then be about twice what it is now. Even that amount of irrigated land will not be as large as the state of Missouri. It will be only a small fraction of the West.

Fortunately, the amount of land irrigated at any time does not itself tell the full importance of irrigation. Irrigated land in the West produces larger crops to the acre than most unirrigated land anywhere. Since most irrigated farms are small, the farm population of irrigated areas is dense. The village population supported by irrigation is larger than the farm population. It may be twice as large.

Many products of irrigated lands reach markets throughout the country. The irrigated areas are themselves markets for goods from many places. The transportation and sale of these products and goods make work for many people.

Some rivers cannot be developed with profit for irrigation alone, or for electric power, or flood control. If several things are handled together, it may be profitable to develop such rivers. This was done at Grand



Figure 175. Principal irrigated areas

Coulee and at Boulder. Each purpose bears its share of the cost. Irrigation helps the other purposes and is helped by them.

In many ways, then, the spreading benefits of irrigation reach far beyond the irrigated lands themselves. The future of irrigation will shape in large part the future of the West. No wonder that western people are doing all they can to improve on what nature did about water. No wonder the government is helping them.

Different Kinds of Work

Beginnings. Early life in the West has been described (pp. 71-88). The pioneers started most kinds of work that are important in the West today. They took up farming and ranching, logging and fishing, mining and manufacturing. They made oases in the desert. They built ocean ports and founded inland villages and cities. Some of the pioneers have been called "empire builders." And so they were. They planned and worked in a big way. They felt sure of themselves and sure about the future of the West.

Differences in farming. Crops of many, many kinds are grown today in the West. There are several reasons for this. Some of the farm lands are irrigated. Others are used for dry-farming. Some farm lands are near the Mexican border and close to sea level. These lands have a long growing sea-



Figure 176. Harvesting a vegetable crop by hand in midwinter

Dorothea Lange

son—365 days long. Some farm lands are near the Canadian border and high above sea level. These lands have a short growing season.

Other farm lands, between those near the two borders, differ from place to place both in climate and soil. Some farm lands have excellent transportation. Others have poor transportation. Some are near good markets, while others are not. Such differences mean great differences in farming. The pictures in Figures 176 and 177 show some of the differences.

A land of winter crops. The first of these two pictures, Figure 176, was taken in the Imperial Valley of California, just north of the Mexican line. It was February. The workers, many of them Mexicans, were pulling, cleaning, and crating carrots to be shipped to eastern markets.

Many other vegetables are grown in the Imperial Valley for winter markets in the North and East. Lettuce is marketed in December and January. Fresh peas are ready for sale by New Year's Day. A little later, sweet corn, asparagus, and other "out-of-season crops" are sold. Most farming in the

Imperial Valley is now done on a big, commercial scale.

Conquering a desert. Figure 176 also shows rich farm land that once was useless desert land. The Imperial Valley gets very little rain, generally only about five inches in a year. Twenty months have been known to pass without a bit of rain in the valley. The summers are hot, very hot. So the valley when first visited was a desert. It was a most forbidding desert. Nothing useful could grow in it. No one could live in it. It was in no way an *imperial* valley.

Finally, a big canal was dug to bring water into this vacant desert from the Colorado River. It was water that came all the way from the Rocky Mountains. Branch canals and field ditches were dug. Settlers came to make farms and irrigate them. Towns were founded. Railroads were built into the area. Before many years the valley was shipping train loads of winter crops. It had really become what it was in name, "The Imperial Valley."

A land of wheat. The next picture, Figure 177, was taken far to the north in southeastern Washington. This is a high area



Figure 177. Harvesting wheat with modern machinery in late summer

Courtesy International Harvester Company

of rolling hills, famous for its wheat farms. Many of the farms contain several thousand acres. The rainfall is about 11 or 12 inches a year. That is not enough even for wheat. So farmers put only half their land in wheat each year. The other half is left bare, or "fallow" as it is called. This bare half is worked, though, to kill any weeds that spring up and to keep as much moisture as possible in the soil.

The half that is fallow one year is put in wheat the next year, and the other half is then left fallow. In this way, one wheat crop has the moisture that can be captured from the light rains and snows of two years.

The work on these big wheat farms is done with the most up-to-date machinery. All work—plowing, planting, and harvesting—is done along lines that are level or nearly level, not up and down slope. This helps to save moisture and to keep the top soil in place (p. 99). The tractor and combine in the picture are moving in a sweeping curve around the nose of a hill.

This kind of wheat farming is big-scale dry-farming. It is commercial farming, but as different as can be from commercial farm-

ing by irrigation in the Imperial Valley.

Farming near the northwestern coast. The valleys of western Washington and western Oregon have mild winters and rather cool summers. Though most rain falls in winter, there are light rains in summer. Many crops grow well without irrigation. So most farmers do not water their fields.

Much land in these coast valleys of Washington and Oregon is used for bush fruits, such as raspberries and loganberries. They thrive in the even, mild climate. Grass stays green throughout the winter. Hay is a leading crop. There are many dairy farms. There also are many orchards of plums, cherries, pears, and apples. Some kinds of wheat are grown on many farms in the Willamette Valley.

In the western parts of both Washington and Oregon there is still much unfarmed land that could be settled and used for crops.

Farming in the Central Valley. The Central Valley of California is the greatest of the Pacific Coast valleys. It is a huge oval of nearly flat, fertile land, almost completely surrounded by mountains (Fig. 170). The winters are mild, with light rainfall. The

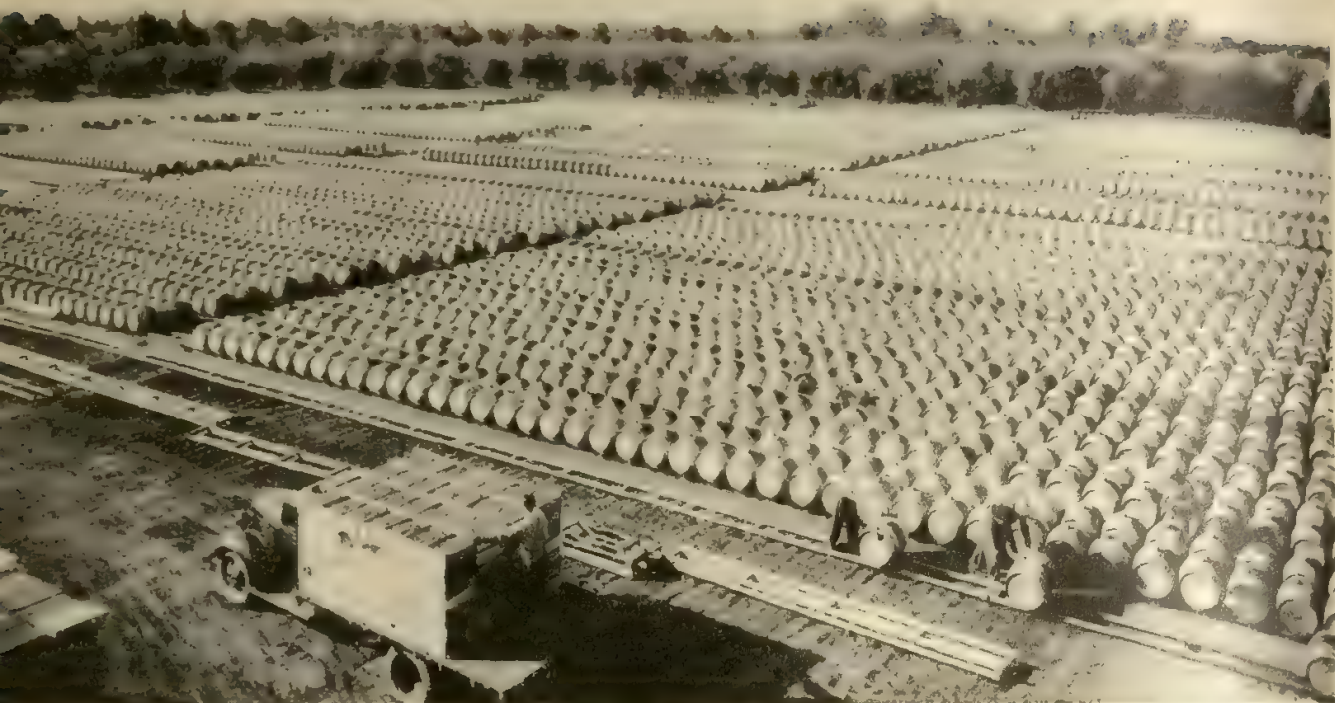


Figure 178. Acres of barrels filled with green olives

© Ewing Galloway

amount of rainfall is less and less from north to south in the valley. Summers are hot, with very little or no rain. The valley is much drier than the valleys farther north (Fig. 88).

Some crops, such as wheat and barley, can be grown in the Central Valley without irrigation (p. 76). These grain crops, sowed in autumn and harvested in early summer, get the full benefit of the winter rains. Most crops have to be irrigated, and so water is the great farm problem.

Meeting a crisis. Part of the farm land in the San Joaquin Valley was irrigated for years by pumping water from wells. Finally, many of the wells failed, partly or wholly. As a result, many thousands of acres of good farm land had to be abandoned. It was feared that many more thousands of acres might have to be abandoned. In their trouble, the people turned for relief, with the help of the government, to the mountains and the rivers.

The San Joaquin River and the Sacramento River carry water from the high Sierra Nevadas through the Central Valley to San Francisco Bay (Fig. 170). They carry most

water away as the mountain snows melt in spring, between March and June. Much of that water could not be used in those months. None of it could be saved for use later in the summer without storage dams in the mountains. So two great dams, one on the upper San Joaquin and the other on the upper Sacramento, have been built by the government.

Other dams will be built. Shortages of water will be prevented. To do this, much water will be taken in canals from the Sacramento Valley to the San Joaquin Valley. Nature gave the Sacramento Valley two-thirds of the water of the whole Central Valley and only one-third of the land. This is being corrected. Several other great benefits, including much cheap electric power, are being gained at the same time.

Too many crops to list. It is very important to California and to the nation to protect and aid farming in the Central Valley. Almost every leading crop of the country is grown there commercially. Many are "specialty crops." Rice, hops, olives, peas, beans, tomatoes, lettuce, and many more in the Sac-



John Vachon

Figure 179. Ranching in a northern mountain valley

ramento Valley. Cotton, oranges, grapes, peaches, pears, apricots, plums, and others in the San Joaquin Valley. A complete list of the crops would fill a big page.

Figure 178 shows acres of barrels of green olives in an olive-growing district in the San Joaquin Valley. The picture was taken in October, during the olive-picking season. It suggests the big scale on which much of the specialty farming is carried on. A single crop may extend for miles along a railroad track or a highway.

Machine work and hand work. The farmers of the Central Valley use machines in their work all they can. For instance, rice is sown from airplanes. Orchards are dusted from airplanes. Even so, many workers are needed in most kinds of farming in the Central Valley. Most are needed to help in planting and harvesting. Thousands of people in California lead a wandering, gypsy sort of life. They go from place to place to

help in picking fruit, harvesting vegetables, and doing other hand work at rush times.

Ranching. The ways of ranching in the West have not changed, of course, nearly as much as those of farming. They are about the same as in earlier years (pp. 87-88). Year by year better care is taken of the grazing lands and closer ties are worked out between grazing and farming.

In the picture in Figure 179, men are driving cattle to the headquarters of a ranch in a mountain valley of western Montana. It is a common scene. Here and there in countless scattered places the work of cattlemen and sheepmen goes on.

Forests and forest products. The big forests of the West are on the mountain slopes. Many people depend on these forests for work. The mountain forests also mean much to people in the lowlands. Snow in the forests does not melt as fast as snow on bare slopes. As a result, the forests help to keep



Figure 180. A sawmill in the leading lumber state

Russell Lee

down floods in many valleys. By slowing down the flow of water from the mountains, the forests also help to keep many streams from getting very low or running dry after flood time. That lets farmers take water from the streams without reservoirs for a longer time than they could if the forests did not help. In addition, the forests reduce erosion and the silting up of reservoirs. Their usefulness is great (p. 95).

It was mainly for such reasons that many forests on the western mountains were set aside years ago as national forests (p. 98). Privately owned forests also cover large areas.

The largest and best forests are in the Northwest. On the moist western slopes of the Cascade Mountains there are great stands of Douglas fir. Many of the trees are hundreds of years old and 200 to 300 feet tall. Along the foggy mountainous coast of northern California are the redwoods, with trees even older and larger than Douglas firs. Red-

woods and Douglas firs are prized for lumber.

On the drier eastern slopes of the Cascades and on the mountains of Idaho and Montana the forests are less dense and the trees not so large. Pines, cedars, larches, hemlocks, and other kinds of trees grow in these forests. The trees are suited to different uses. Hemlock, for instance, is the best tree from which to make pulp for paper. One kind of cedar is used in making pencils.

The forest industry of the Northwest depends largely on *big* trees. It is a big industry. The Northwest furnishes almost half the nation's lumber. From Douglas firs alone comes about one-fourth of the total lumber supply of the country.

Changes in logging and milling. This great forest industry has reached, or perhaps passed, its peak. For years Washington was the leading lumber state. But for years, too, sawmills on Puget Sound have been shutting down. In 1938, Oregon took first place. It

cannot keep up its present output for very many years. In time many Oregon sawmills, now as busy as the one in Figure 180, may also have to close.

This does not mean that there will be an end to logging and milling. Logging methods are being improved (pp. 95, 98). The growth of young trees is being aided. The lumber business in the future will be one of growing as well as cutting trees, one crop of trees after another. No part of the country is better fitted for this work than the Northwest.

Fishing as sport and as work. There are many kinds of fish in the streams and lakes of the West and in the ocean waters off the coast. Each year thousands of sportsmen and tourists catch some of these fish for recreation. Thousands of men work, too, in the commercial fishing and fish-canning industry of the West. The most important fish commercially is the salmon. The most important salmon stream is the Columbia River.

Salmon fishing on the Columbia River. Salmon spend most of their lives in the ocean, feeding there on small fish. Every year great numbers of full-grown salmon come from the ocean into the Columbia River and other northwestern rivers. They lay their eggs in the beds of these streams and their branches, perhaps far inland. The baby salmon go downstream to the ocean. There they live while growing big.

The best time to catch salmon is when they start on their trip upstream. Then they are large and fat. Commercial fishing on the Columbia is kept by law to the lower river. It is not allowed on any of the tributaries. Most fish are caught in nets.

More than two-thirds of the salmon caught on the lower Columbia in recent years were chinook salmon. They are much larger than other kinds. Each chinook weighs 20 to 25 pounds when full grown. Most of the salmon catch is canned for shipment to market. The canning factories are near the waters in which the fish are caught. Many fresh salmon are

sold in near-by markets. Many others are frozen and shipped to the East.

Fishing at sea. Ocean fishing is carried on from ports in all three states on the coast. The fishing fleet that works in summer near the entrance to Puget Sound catches halibut, for the most part.

Many salmon are caught with lines and hooks that are pulled through the water by boats which work in the Pacific off the mouth of the Columbia. This is called trolling. The boats are called trollers. Some of the ocean trollers are large boats, with Diesel engines and cold storage space. They stay over the schools of fish for two weeks or more at a time. Then they return to port with their cargoes.

Most of the fish caught off the coast of California are called either tuna fish or sardines. These fish usually are canned before they go to market.

Mining. Gold was a mighty force in the early growth of the West (p. 73). Silver mining helped, too (p. 84). These precious minerals, as they are called, still are mined at various places. Of course, less of each kind is mined now than in early years.

One of the marvels of mining today in the West is shown in Figure 181. It is a copper mine in Utah near Salt Lake City. The copper ore was so near the surface that shafts and tunnels were not needed. The mine is a huge open quarry that covers more than 500 acres. The train in the picture is leaving the quarry with a load of copper ore. Montana and Arizona, as well as Utah, have large copper mines.

There are deposits of metal ores in every one of the western states. They include deposits of lead, zinc, and iron, of aluminum ore and magnesium ore, as well as the deposits of gold, silver, and copper.

Many of the ore deposits are in mountains, but others are not. Some are in deserts. The mining settlements are wherever good ores happened to be. Miners must work in

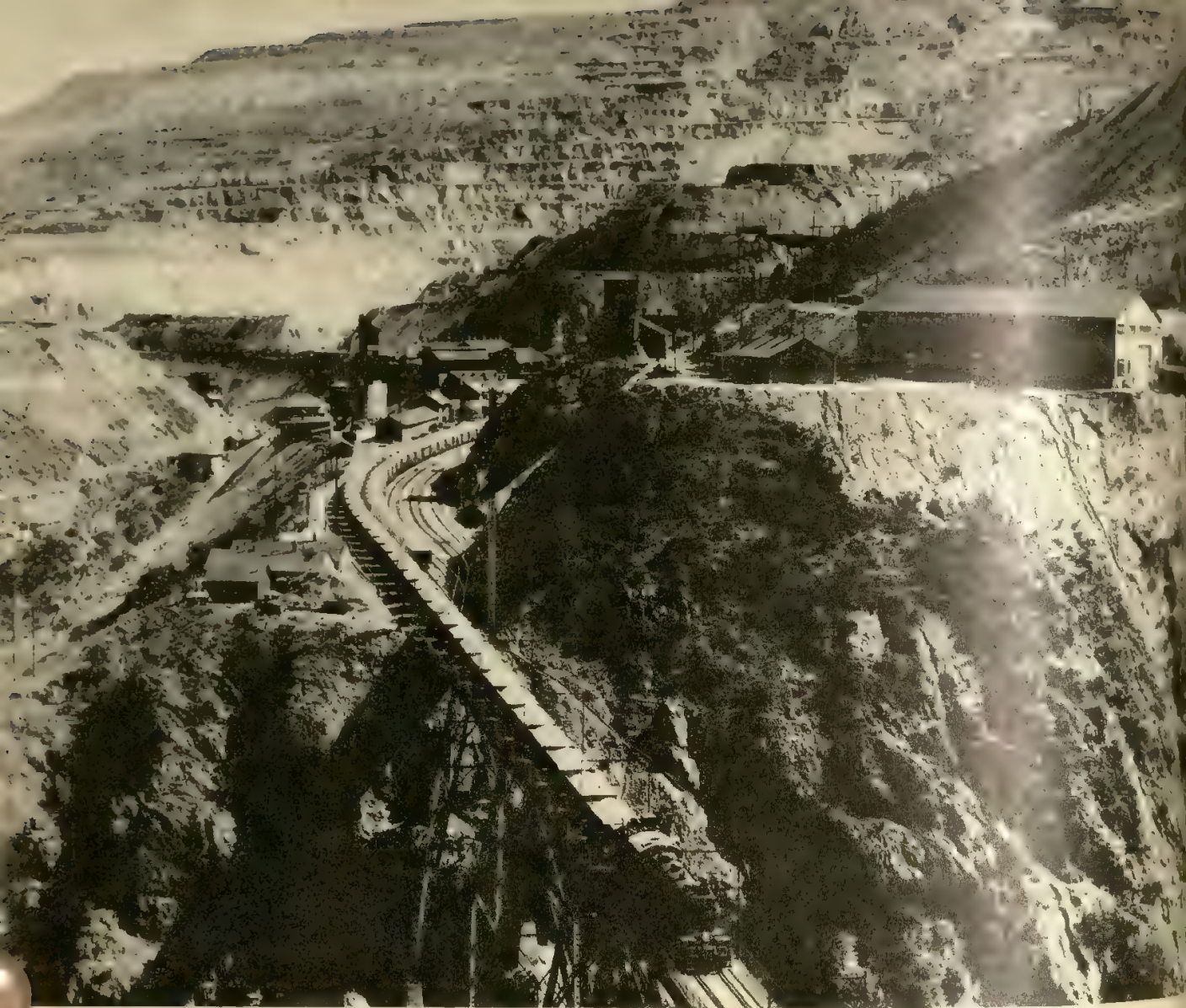


Figure 181. In a huge copper mine in Utah

© Charles Phelps Cushing

many kinds of places. Some of these places are attractive. Most of them are not attractive.

The greatest oil fields in the West are in southern California. Cheap oil from these fields has done much for the Far West. It has been used as fuel, in place of coal, by some railroads and by many manufacturing plants. Much has been exported.

Before many years pass, California probably will have to import oil as its wells give out. Imported oil will cost more than California oil has cost. The railroads and steam plants that now burn oil as fuel may then use electricity made with water power.

Manufacturing. Water power, unlike oil, cannot be used up. There is a vast amount of this endless power in the West. Much more can be developed. The water power is cheap. Electricity made from it can be sent by means of wires to almost any place where it may be needed. The West hopes that its water power resources will help it to start many new manufacturing industries. It is working hard for them.

In the past, most manufacturing in the West has meant changing products from western farms, ranches, forests, and mines into things ready for use. In the cities of the

Northwest, for instance, much flour is made from wheat grown in Washington and Oregon. In many places there are meat-packing plants and in hundreds of places there are sawmills. Montana, Utah, and Arizona have big copper smelters, where the metal is separated from the ore mined near-by. Near Los Angeles and San Francisco there are oil refineries.

The products of some of the industries named are not ready, of course, for final use. Such products are used as "raw materials" in other plants in the West or in plants somewhere else. Take lumber as an example. Some of it is used in the Northwest in building wooden boats. Some is used in Los Angeles in making furniture. Lumber from western sawmills is used in many ways in many, many places, both far and near.

The larger cities manufacture many different things. Los Angeles, for instance, makes more oil-well machinery than any other place in the country. It is high among the cities that prepare food products, make clothing, manufacture rubber tires. Some western plants are very big. The world's largest cement plant is near San Francisco. It was built to supply the cement for Shasta Dam, which now controls the flow of the Sacramento River (p. 194).

The West manufactures many things, then, for many purposes. World War II brought it new industries of great size. Airplanes were made at Seattle and Los Angeles. Ships for the navy and the merchant marine were built on San Francisco Bay, the lower Columbia, and Puget Sound. A huge steel plant was located near Salt Lake City and another near Los Angeles.

Most of the work in these war plants ended, of course, when the war ended. Many thousands of workers lost their places. Many people had come from other parts of the country to work in the war plants. And many of those people wanted to stay in the Golden West. So the West had the big problem of

trying to find new work for large numbers of people. That strengthened its desire for new manufacturing industries that will be permanent.

Cities and People

Large cities. The largest three cities of the West are seaports. They are Los Angeles, San Francisco, and Seattle. Portland, next in size, is a river port within reach of ocean ships. All four of these cities are meeting places of leading land routes and sea routes. They have far greater opportunities for trade and manufacturing than the inland cities of the West.

San Francisco, Seattle, and Portland have natural harbors. They were important in the early life of the West. Stories about them as young cities have been told (pp. 74, 81-82). Los Angeles has a man-made harbor. Los Angeles is now larger, however, than the other three cities put together.

Los Angeles. Los Angeles is only a few years younger than San Francisco (p. 71), but it became important much later than San Francisco. The coming of two railroads from the east helped it. The discovery of oil near-by helped. The coming of the moving-picture industry helped. Manufacturing and the spread of irrigation farming in the region also helped. A great harbor was built on the coast 20 miles south of Los Angeles and made a part of the city. The harbor helped. Advertising helped. The climate itself attracted many people. All these things together made Los Angeles great.

As Los Angeles spread over the surrounding plain, it took in many smaller communities. Now the city is said to cover more ground than any other city in the world. It is 50 miles across Los Angeles in some directions. Even an airplane view, such as the one in Figure 182, can show only a little of the city.

Los Angeles has become the fourth city



Figure 182. Looking across Los Angeles, the largest city of the West

© Fairchild Aerial Surveys, Inc.

of the United States in population. It expects to have a much larger population and even greater fame.

The bay cities. San Francisco can look over from its hills at the Golden Gate, Figure 170, to a line of ports on the eastern side of the bay. The largest cities in the line are Oakland and Berkeley (Fig. 170). This line of east-side cities reaches up to the break in the coast mountains through which the Sacramento and San Joaquin rivers reach the bay. The "Bay Cities" together unite ocean shipping with the great Central Valley of California.

A bridge crosses the bay between San Fran-

cisco and Oakland. Trains, streetcars, and automobiles all use the bridge. In many other ways, too, the cities on the shores of the bay are closely tied together in their everyday life. They are really a family of ports. San Francisco is head of the family. But Oakland may soon lead as a port. It has very modern port equipment and better railroad and highway connections than San Francisco with the back country.

Northwestern ports. Portland never had a strong rival in the shipping business of the Columbia River system. It was at the head of ocean navigation on the Columbia-Willamette waterway (p. 81). This waterway was

deep enough for almost any ocean ship when Portland was young. After larger vessels were built, the river channels between Portland and the sea were dug deeper. Today, very big ocean ships reach the city.

Portland stands on both sides of its river. On the west side is the main business district. On the east side are lumber yards, grain elevators, flour mills, and factories that tell of leading kinds of work in the state as well as in the city.

The advantages of Seattle, page 81, give it secure leadership in shipping on Puget Sound. Anything that moves north in ships from the west coast to Alaska, or around to Japan, or China, can go in least time from Seattle. Anything that comes from those lands to the west coast finds at Seattle the first modern port with railroads leading east across the country. These things will count more and more in the life of Seattle. Many kinds of products handled on Seattle docks, such as lumber, fish, and grain, are to be seen also on the docks at Tacoma (Fig. 170). Tacoma is the second city on Puget Sound.

Inland cities. There are three large inland cities in the West. They are Spokane, Washington; Salt Lake City, Utah; and Phoenix, Arizona. Each of them is a railroad center (Fig. 170). Each is the chief business center for a large region.

Spokane grew up around the falls of the Spokane River. Water power is developed at the falls. The city is near the great wheat lands of eastern Washington and the forests of northern Idaho.

Salt Lake City serves a large area in southern Idaho, in addition to the great oasis in Utah (pp. 86-87).

Phoenix is in the heart of another great oasis won from the desert by irrigation. To this oasis Phoenix largely owes its importance.

The people. In the West the spirit of the old frontier still lives. This is a spirit of optimism and determination, of hope and faith in the future. The West is still young.

The people believe that careful planning and strong teamwork will bring good results, even in places where natural difficulties are great. This spirit of the West is perhaps its greatest resource.

Things to Remember about our Country

1. *Western United States has wonderful scenery.* What are the chief kinds of scenery in the West? Tell how scenery makes money for the West.

2. *"In the West, mountains and water go together."* Just what does this mean? Show why it is a very important fact in the life of the West.

3. *"Only water can change a desert into a garden."* Tell the story of how men changed two different deserts into gardens.

4. *The government has done much to help the West save and use its precious water resources.* Give several examples of this. Tell all you can about each case.

5. *The amount of land irrigated, Figure 175, does not tell the full importance of irrigation.* Why not? Give all the reasons you can.

6. *There are great differences in farming from place to place in the West.* Why? Give several striking examples of differences.

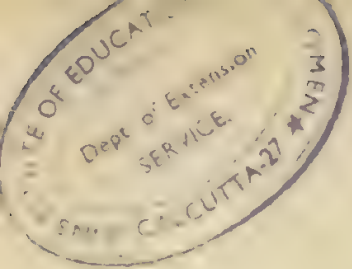
7. *"The largest and best forests are in the Northwest."* Why? Tell what you can about work in these forests. Why do the forests on the mountain slopes mean much to people in the lowlands?

8. *In the West, "the most important fish commercially is the salmon."* What can you tell about the life habits of the salmon? About the salmon industry?

9. *"Miners must work in many kinds of places."* Why? What kinds of mining are carried on in the West?

10. *"The West manufactures many things, for many purposes."* But it is trying hard to develop new manufacturing industries. What are the leading kinds of manufacturing now done in the West? Why are new manufacturing industries wanted?

11. *"The largest three cities of the West are seaports."* Choose one of these cities and write a story about it.



Beyond the States

Scattered American lands. Outside the United States there are many scattered American lands. Two of them are in North America. These are Alaska and the land along the Panamá Canal (Fig. 183). The picture in Figure 184 shows a town on the coast of Alaska.

Some other scattered American lands are islands in the West Indies. Most of them are islands in the Pacific Ocean. The map on page 206, besides showing Alaska, shows two groups of islands in the Pacific. The same lands, and many others, are shown on the globe on page 207.

The outlying American lands came to the United States in various ways at different times. First among them were the Russian possessions in North America, later called Alaska, which Russia offered to sell to the United States in 1867.

Alaska

The myth of the icebox. The United States bought Alaska from Russia for seven million two hundred thousand dollars in gold. This amounted to less than two cents an acre. Many people opposed the purchase as a complete waste of money. Alaska, they said, was barren in every part. Any resources that might be found there could never be used. This was a land of snow and ice. It was like an icebox, in which, of course, people could not live.

The story of the icebox was only one of many foolish myths about Alaska. Many people believed some of the myths for a long time. Gradually, though, more and more was learned about this new American land, and most people realized that the United States had gained a rich prize.

The body and its arms. Alaska is a big land. It is nearly one-fifth as large as the United States. The main body of land in Alaska, roughly square, forms the northwesternmost part of North America (Fig. 183). This part has two long arms, as the map shows.

One arm, a peninsula and beyond the peninsula a string of islands, reaches far out to sea, between the Pacific Ocean and Bering Sea. This arm is near the northern ship route across the Pacific. For this reason, it was very important in World War II. For this reason, it always will be important. It is one of the main lines along which the United States will look westward to Asia.

The other arm is a narrow belt of mainland and islands that reaches southeast, between Canada and the ocean. There were Russian settlements along this coast, and so it was part of the purchase area. It is called Southeast Alaska.

There is no land route along the coast between Southeast Alaska and the main part of Alaska. Where the land between them is narrowest, a little south of the line of 60° (Fig. 183), the way is blocked by high mountains and glaciers. In other places, too, there are mountains on or near the southeastern coast. So, most travel up and down the coast has to be by boat. Between the mainland and the off-lying islands there is a water route called the Inside Passage. It is the "front street" of Southeast Alaska. The town in Figure 184 is at the northern end of this famous water route.

In Southeast Alaska. This part of Alaska is unlike any other part. It looks rather small on the map (Fig. 183), but is larger than all New England outside Maine. The scenery is wonderful, as Figure 184 suggests. The



NORTH AMERICA

Miles
0 200 400 600 800

ELEVATION IN FEET

	More than 10,000
	5,000 to 10,000
	2,000 to 5,000
	1,000 to 2,000
	500 to 1,000
	Sea Level to 500
	Below Sea Level



Figure 184. At the northern end of the Inside Passage

© James Sawders

mountains of the mainland and the islands, covered with forests except at the higher levels, rise directly from the sea. There is little level land anywhere. The ragged coast line provides many deep, protected harbors.

Wet winds from the ocean bring much rain to Southeast Alaska. Most days are cloudy, with at least some precipitation. The winters are mild. The harbors are never closed by ice. Trees grow well in the moist climate, and the dense forests contain much splendid timber.

Southeast Alaska has more than one-third of the people of Alaska and five of the largest ten towns. But there were only 72,500 people in all Alaska in 1940. Most of this vast land is still nearly vacant. Large areas are uninhabited.

Juneau (Fig. 185), on a fine harbor near

the northern end of the Inside Passage, is the capital of Alaska, the largest town, and a famous gold-mining center. It also manufactures some lumber, and there are salmon canneries near-by. The stores and shops of Juneau resemble those of much larger places in the states.

Ketchikan (Fig. 185), the second largest town, lives on the salmon-fishing industry. It has 10 salmon canneries.

Each of the towns of Southeast Alaska is a tiny world in itself. "When you get off the boat or airplane at one of these places, there you are until a boat or airplane takes you away." There is no highway system. Roads run out from the larger towns for only a few miles.

In general, Southeast Alaska depends chiefly

on fishing and mining and lumbering. There are farms in some of the small valleys near the towns. Farm settlers have a hard time in clearing the heavily forested land.

From Seward to Fairbanks. There is a railroad from Seward, the main port on the southern coast of central Alaska, to Fairbanks, largest town in the interior of Alaska. These towns are shown on the map in Figure 185. The railroad, called the Alaska Railroad, was built by the government and is run by the government. It ties together several farming areas in fertile valleys. It taps important deposits of coal. And it crosses a large southern tributary of the Yukon River, where connection is made with river traffic. The railroad itself runs large steamboats on the Yukon.

Many crops, such as oats, barley, wheat, potatoes, and hardy vegetables can be grown in the valleys served by the railroad, but the farming population is small. A few years ago the government helped people to settle in one of the valleys, not very far from Seward. Some of the settlers gave up and left. Others stayed, and succeeded. The conditions for farming in these valleys are good, but not easy. Settlers face pioneer conditions.

The farm lands near Fairbanks are farther north than any others in Alaska. The temperature there may drop to zero or below on about two-thirds of the days in a year. The ground is always frozen, except within a few feet of the surface. The growing season is very short, but the summer days are very long and so crops grow rapidly. At the end of June the sun is above the horizon about 21 hours a day.

Inland trading center. Fairbanks is the chief trading center of a vast area. Its stores supply goods for trappers, fur traders, fishermen, miners, and farmers, for Indians and white men. It receives and ships goods by train and river boat, by truck and by airplane. It is the great meeting place and crossroads of interior Alaska.

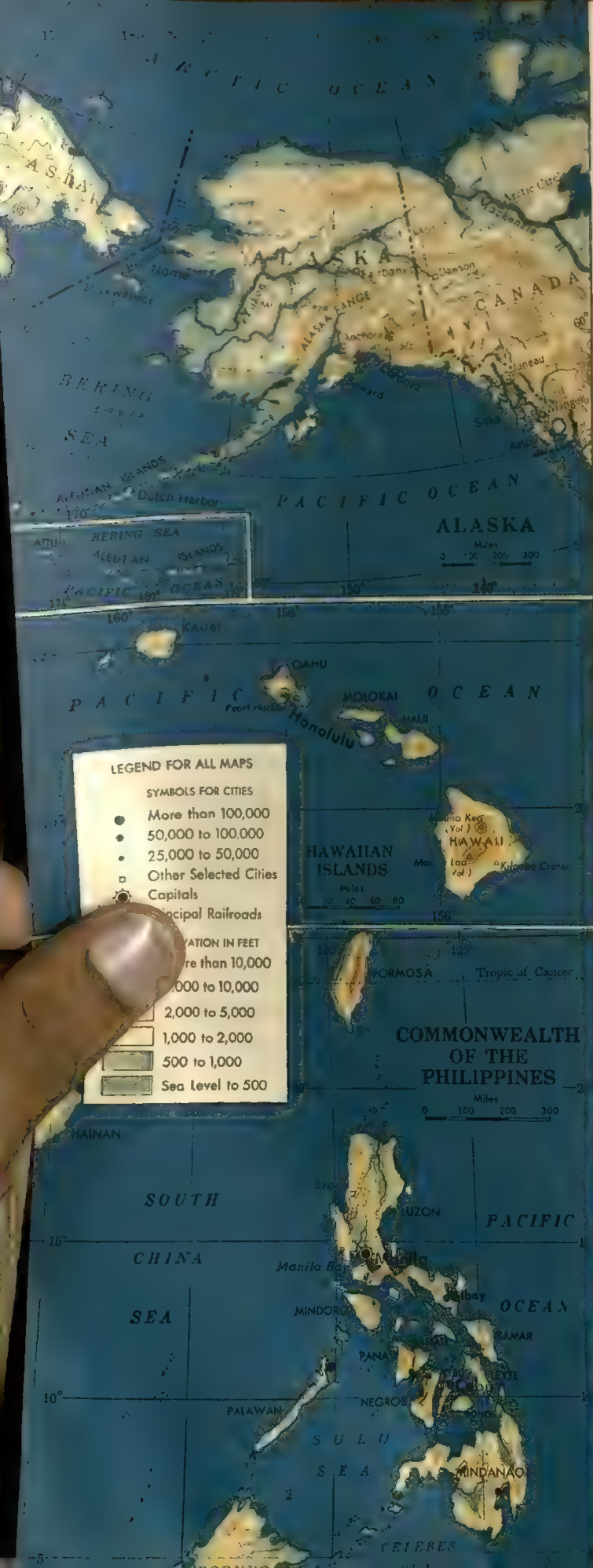
Planes from Fairbanks fly almost everywhere in Alaska. Fairbanks is also the main stop in Alaska on the northern airway from the United States to Asia.

Finally, Fairbanks is the end of the Alaska Highway. This highway was built by the United States Army during World War II, with the consent and help of Canada. It runs northward through Canada, along the eastern foothills of the Rockies, and so on into Alaska. Much of the way it is not a good road for trucking. Goods from the United States can go at less cost by boat from Seattle to Seward and by rail from Seward to Fairbanks. The Alaska Railroad will increase in importance. The Alaska Highway may have little future importance.

Near Bering Sea. Few whites live in western Alaska, near Bering Sea. There are no deep harbors along the coast. The sea is shallow, so shallow that ships of medium size sometimes go aground out of sight of land. It is covered with drift ice more than half of the year, and in all seasons is swept by strong winds and storms. The land, partly covered with grasses and dotted with willows and alders, is poor.

The main town on the Bering coast is Nome (Fig. 185). About fifty years ago it had a gold boom. Thousands of dollars' worth of gold were washed by hand out of the sands of the beach. Thousands of people came to Nome, seeking their fortunes. When little gold was left, most of the people moved away. But Nome now has one new advantage. Even though it is icebound from October till late May, it is in close touch with the outer world by airplane. It is an important stop on the air route through Fairbanks to Asia.

Most people who live along the Bering coast are Eskimos. In fact, this coastal region is "Eskimo land." Most of the Eskimos live chiefly by fishing, trapping, and hunting, as did their ancestors. Each year they move back and forth between their winter villages near the coast and their summer fishing



camps along the streams. Many Eskimos now raise reindeer, however, and depend on them more and more for food and clothing.

The home of the fur seals. The Pribilof Islands (Fig. 185), in the southern part of Bering Sea, are the home of the famous fur seals. Their fine, silky pelts have long been highly prized, and years ago there was danger that they would all be killed off by eager hunters. Then a treaty was signed by the United States, Britain, Russia, and Japan, under which the seals have had reasonable protection. Since then, their numbers have increased greatly, though many are killed each year under government control.

Along the great river. The Yukon River is one of the great rivers of the world. As Figure 185 shows, it rises in Canada, not far from Juneau, and flows northwest to the Arctic Circle at Fort Yukon. From there it flows southwest in general, makes a great bend in its lower course, and finally empties into Bering Sea. The Yukon is a crooked river, almost filled with islands in places, and fringed with spruce, larch, birch, and other trees. Back from the river the trees are smaller and within a few miles they give way to grassland or tundra.

The Yukon is the chief natural highway of interior Alaska. During the short season of open water, June through September, it can be navigated far up into Canada. Canoes, rafts, and steamboats are all used on the river.

Near the mouth of the Yukon there are many Eskimo villages. Farther up, there are Indian villages. Salmon swim up the river for more than a thousand miles. Great numbers are caught by the natives. Many are dried and kept for winter food.

Only a few white men live along the Yukon or on most of its tributaries. Their settlements are all small. Most of the whites are gold miners. Some gold is panned from the streams, but most of it is obtained by dredges. Some of the white men are trappers, and some have taken up fur farming.



Figure 186. The Pacific Ocean on the globe

The Arctic slope. Northernmost Alaska slopes to the Arctic Ocean (Fig. 185). There is always ice in the sea and the ground along the low coast is always frozen. A few Eskimos live along the seashore. They herd reindeer, which live mostly on the tundra lichens. They also hunt the polar bear, the walrus, and the white Arctic fox, useful for its fur.

This Arctic slope has been of little use to

whites, but it may have deposits of oil. A search for oil was made there during the war.

Trade. Salmon and gold are the chief products shipped out of Alaska. In some years they have had a value, taken together, of about sixty million dollars. This is more than eight times the sum paid for Alaska.

Food products, clothing, machinery, whiskey, tin cans for packing salmon, and gasoline

for running small boats are leading items shipped to Alaska.

The busy summer time. The fishing season begins in late May or early June. It is over by the end of August. Placer mining begins when the ice thaws on the streams, and ends when new ice forms in autumn. Logging and lumbering may stop in winter. Farmers in the inland valleys have a very short season in which to grow crops. Tourists come in largest numbers in July. Many people who work along the coast in summer do not stay over winter. Busy summers and dull winters are the rule. The opposite is true only for the trappers.

Looking ahead. The war gave the nation a new interest in Alaska. It will never again be "a land apart." But if Alaska is to play the part in the life of the nation that it can and should play, many things are needed. For instance, Alaska needs more people, more kinds of work to support its people, better transportation. How many people *can* it support? *Where* can they live? *What* can they do for a living? In a large part of Alaska, only a few people can ever live and work. In some parts, where conditions are better and there are rich unused resources, many more people than now can live, and live in comfort.

Big plans are needed for this big land. They must be made by the government, which still owns almost all of the land and its resources. And they must take into account all such questions as those asked above. Finally, only people who have the pioneering spirit should settle in Alaska under any plan.

The Hawaiian Islands

Pacific crossroads. The globe (Fig. 186) shows only a few of thousands of islands scattered about in the vast Pacific. In the middle Pacific are the Hawaiian Islands, more than 2000 miles from California. For travelers by airplane or ship these islands are great ocean crossroads.

Such an ocean crossroads is a good location for trade. To the United States, however, the Hawaiian Islands are most important as island guards. Military and naval bases there help to defend the United States and its possessions in the Pacific.

One of the islands in the Hawaiian group is Hawaii (Fig. 185). Its name often is used for the whole group. Most ships stop at Honolulu, on the island of Oahu. The famous Pearl Harbor naval base is a few miles west of Honolulu, on the same island.

Honolulu is the capital of the Territory of Hawaii, which includes all the islands in the group. Hawaii was an independent country when, in 1898, it asked to become part of the United States. It has asked many times since to be admitted to the Union as a state. It may well become the forty-ninth state.

People. When white men first came to the islands, they found a brown-skinned, dark-haired people, the Hawaiians. Through the years many other people have come from almost all over the world—from Europe, China, Japan, the Philippine Islands, and the United States. Today the Hawaiians are only a small part of the population.

Sugar plantations. The Hawaiian Islands might well be called sugar islands, for most farm land is planted to sugar cane, and much of the regular business of the islands depends on sugar exports. The tall smokestacks of the sugar mills rise high above the farm villages.

Before harvest, men set fire to the cane fields. The dry leaves quickly burn off, but the stalks, full of sap, do not burn. It is much easier to work with the stalks after the leaves are gone. Besides, burning the leaves saves the work of cutting them off by hand.

Growing pineapples. The field in the picture is being planted to pineapples, the second most important crop in Hawaii. A machine has spread long strips of paper on the ground. Now the man in the foreground is setting out young pineapple plants, pushing them through the paper into the ground.



Figure 187. Planting pineapples

© James Sawders

The paper will help to hold the moisture in the soil, and to keep down weeds.

In Hawaii many school boys and girls make extra money during their summer vacations by working in canning factories. Most of the world's canned pineapples come from Hawaii.

For food. Most of the good land in Hawaii is used for commercial farming—for sugar cane, pineapples, and even a little coffee and cotton. Hawaii must import more than half of its food. Both fruit and fresh vegetables are brought across the sea from California. Hawaii might be better off if more food were grown in the islands, and less were imported.

Mountains and farmers. The map in Figure 185 shows that there are high mountains in the center of each important island in the Hawaiian group. These mountains make a great difference to the farmers, regardless of what crops they grow. Many slopes are too steep for crops of any kind. The winds which bring rain blow from the northeast most of the year. Most of the rain falls on the north-

eastern slopes. Irrigation is needed on the southwestern slopes.

A living in Hawaii. All around the world Hawaii is known for the things which attract tourists—fine hotels, bathing beaches, beautiful flowers. Yet most people in the islands make a living from farming or trade. Most factories in Hawaii either prepare farm goods for market or make things the farmers need. One important business is that of making tin cans for pineapples. Most of Hawaii's trade is with the United States.

Island Stepping-Stones

Across the wide Pacific. Beyond Hawaii there are thousands of other islands in the Pacific. A few of them belong to the United States. On the globe in Figure 186 the more important American islands in the Pacific are named.

Midway, Wake, and Guam. These three islands are stepping-stones that lie between



Figure 188. On a farm in the Philippines

the Hawaiian Islands and the Philippines.

Wake Island is now a stopping place for planes flying across the Pacific.

Guam is a rocky island about 30 miles long. In normal times it has a population of about 20,000 natives, besides the Americans who are there for military reasons. The natives in Guam, as in most other Pacific islands, make a living chiefly from farming. The leading money product is the coconut.

Southwest of Hawaii. Besides the stepping-stones to the Philippines, a chain of American islands reaches southwest from Hawaii toward Australia and New Zealand (Fig. 186). Three of the islands named on the globe are Palmyra, Jarvis, and Tutuila. Most of the islands are very small and have few inhabitants.

Valuable islands. To the United States, the products of these scattered islands are of little importance. As stepping-stones, the

islands have tremendous value. They furnish bases where ships or airplanes can stop for fuel, supplies, or repairs. Most of all, these islands help to protect the interests of the United States in the Pacific.

Commonwealth of the Philippines

Independence. The Philippine Islands, near the coast of Asia (Figs. 185 and 186), fell into American hands in 1898, at the end of a war with Spain. Soon the United States promised that some day the Philippines would become independent. Finally, in 1934, Congress passed a law which set up the "Commonwealth of the Philippines" and declared that after July 4, 1946, the islands would be free. So now the Philippines are an independent country, and no longer an American land.

A living in the Philippines. Most of the people in the Philippines are farmers. The

leading money crop is sugar cane. Rice is by far the most important food crop. In the picture a farmer is plowing a little rice field while his wife and daughter plant rice in another plot near-by. In a few months the rice stalks will be tall, and turning yellow, ready for harvest.

Problems of independence. The farmers and other people in the Philippines face serious problems, some of which result from independence. For instance, when the Philippines were part of our country the farmers got a higher price for sugar in the United States than they could get in any other market. Now they may get less money for their sugar. If so, they will be able to buy fewer goods from overseas. Perhaps in time they can develop new crops or new markets that will help them make a good living. And it may be that new factories in the islands will make many things which once were imported.

Puerto Rico

Island from Spain. The island of Puerto Rico became a possession of the United States at the end of the same war which made the Philippines an American land. Puerto Rico is in the West Indies, only about 1000 miles from Florida (Fig. 183). One can see from the map how important this island is in guarding the Panama Canal. Most people in Puerto Rico speak Spanish, for it once was a Spanish colony.

City and farm. San Juan, Figure 189, is the capital and largest city in the island. Still it is a small city. Most people in Puerto Rico are farmers. The people of San Juan depend much on those farmers. The harbor would be empty without the export of farm goods, and the import of manufactured goods in return.

Sugar plantations. The men in Figure 190 are loading sugar cane, the most important money crop in Puerto Rico. This island, like Hawaii, might well be called a sugar island.



Figure 189.

Large sugar plantations cover most of the lowland along the coast (Fig. 189).

Mountains and mountain farming. Nearly all the interior of Puerto Rico is mountainous, like the land in the background of Figure 190. In the mountains nearly all the farms and fields are small. Scattered sheds for drying tobacco tell of tobacco farms, and wide concrete floors show where coffee is grown. In places, the mountain slopes seem covered with dense forests. Many of these trees were planted to shade the coffee bushes which grow underneath.



Figure 190. Loading sugar cane

© Frederic Lewis

Nearly everywhere in Puerto Rico some land is used for food crops, too, such as bananas, corn, and beans. Oranges and grapefruit also are grown in a few places.

Problems. The people in the picture (Fig. 190) probably are like most other workers in Puerto Rico. They have a hard time making a living. They get little money for their work, and often the work does not last all year. Their houses are poor, and their food is not very good. Even in beautiful San Juan there are many very poor homes. Most workers in Puerto Rico have only a few simple foods such as rice, beans, corn meal, coffee, and dried fish.

Everyone in Puerto Rico knows the hurricane problem. In just a few hours a storm of wind and rain may destroy or damage homes, level fields of sugar cane, blow coffee berries off the trees, and tear the tobacco plants to bits.

There is a land problem, too. Rains have washed away much good soil. And there is

not enough land for all the people. About 500 people must make a living from each square mile of land.

Progress. Our government has tried to help the people of Puerto Rico to make a better living. Good roads have been built throughout the island. Better ways of farming are being taught in the schools, and to the farmers themselves. But no one has yet solved the hardest problem of all. Puerto Rico has too many people, and too little land.

The Virgin Islands

Lands from Denmark. The Virgin Islands, next door to Puerto Rico, are the newest of the scattered American lands (Fig. 189). The largest island in the group is Saint Croix. The United States bought the Virgin Islands from Denmark in 1917. They are an important part of our island defenses.

Some people in the Virgin Islands make a living by growing sugar cane. Others raise cattle, or collect the leaves of the bay tree, used for making bay rum. A few tourists visit the islands each year.

The Canal Zone

Between two oceans. Before the Panama Canal was built, the American continents were a great barrier to ocean trade and travel. A ship sailing from New York to San Francisco had to go all the way around the southern tip of South America. After the canal was opened, the two cities were thousands of miles nearer together by sea. Now ocean ships can sail through the land, from ocean to ocean, at Panamá.

The Panamá Canal was built and is operated by the government of the United States. A French company had started the project, but failed partly because many workers died of disease. Then our government took over, finished the canal, and made the Canal Zone a much safer place to live and work.

As the map on page 211 shows, the Canal Zone is a five mile strip of land on each side of the Panamá Canal. The cities of Panamá and Colon belong to the Republic of Panamá, though they are within the Canal Zone (Fig. 189). Even in these cities, the United States has authority to act in defense of the canal.

Sailing through the canal. The canal across the isthmus was not dug down to sea level. Gatun Lake (Fig. 189), through which the ships sail, is about 45 feet above sea level. Ships are raised and lowered by six pairs of locks, three on the Atlantic side and three on the Pacific side. The picture to the right shows one pair of locks. The tracks along each side are used by locomotives which help move the ships along.

Many Lands—One Land

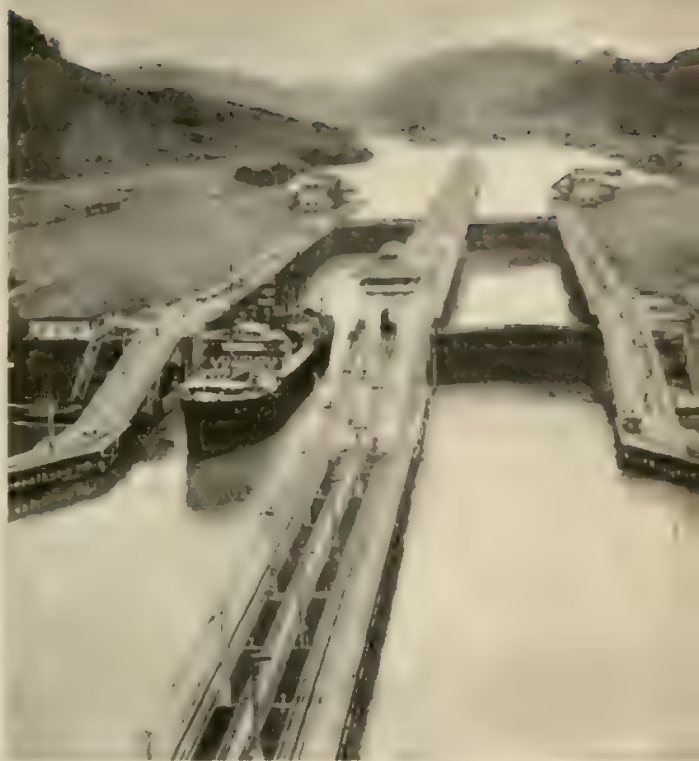
Under one flag. The American lands beyond the states are scattered over a vast area. A trip from Puerto Rico to Guam is a trip nearly halfway around the world. As the stories, maps, and pictures in this chapter indicate, these lands differ greatly, one from another. Yet in spite of distance and differences there is one thing which unites them all and ties them to the states. The same flag flies over all. Both the people who live in the states and in the possessions are Americans.

Things to Remember about our Country

1. *Little by little, the people of the United States have learned that Alaska is a rich land.* Name four resources in Alaska. Which two are most used? What has held back farming?

2. *"If Alaska is to play the part in the life of the nation that it can play and should play, many things are needed."* Name three. Explain why each is needed.

3. *"Since 1867, many scattered lands have been added to our country."* Name three ways by which lands were added. Give examples.



D Ewing Galloway

Figure 191. A pair of locks in the Panamá Canal

4. *The Hawaiian Islands are at the crossroads of the Pacific, well located for farming, for trade, and for the defense of our country.* Why is Hawaii a better place for farming than Alaska? What kinds of things do ships carry to and from Hawaii?

5. *Island stepping-stones reach from Hawaii on toward Asia and Australia.* Use the globe, Figure 186, to explain why "stepping-stones" are important.

6. *The Commonwealth of the Philippines is now an independent country.* What difference may this make to farmers there?

7. *Good crops grow in Puerto Rico, but most of the people are poor. There is not enough land for them.* How is our government helping the people? Describe the hurricane problem.

9. *The Panamá Canal brings many places much closer together by sea.* Use the large globe on page 4 to explain this.

Exploring and Finding for Ourselves

1. Name four travel routes which meet at Fairbanks. Trace two of them on the map.
2. Which pictures in this chapter suggest warm lands? How can you tell?



Figure 192.

CANADA

Our Northern Neighbor

Friendly countries. The northern boundary of the United States is the southern boundary of Canada. From ocean to ocean, along a line more than 3000 miles in length, the two countries are neighbors. They are very friendly neighbors. For more than 125 years neither country has had forts along the

line between them. It is the longest unfortified boundary in the world.

Land and people. Canada is larger than the United States, including Alaska. But the northern part of Canada is far from the equator and has a cold climate. The east-west line marked 60° on the map crosses

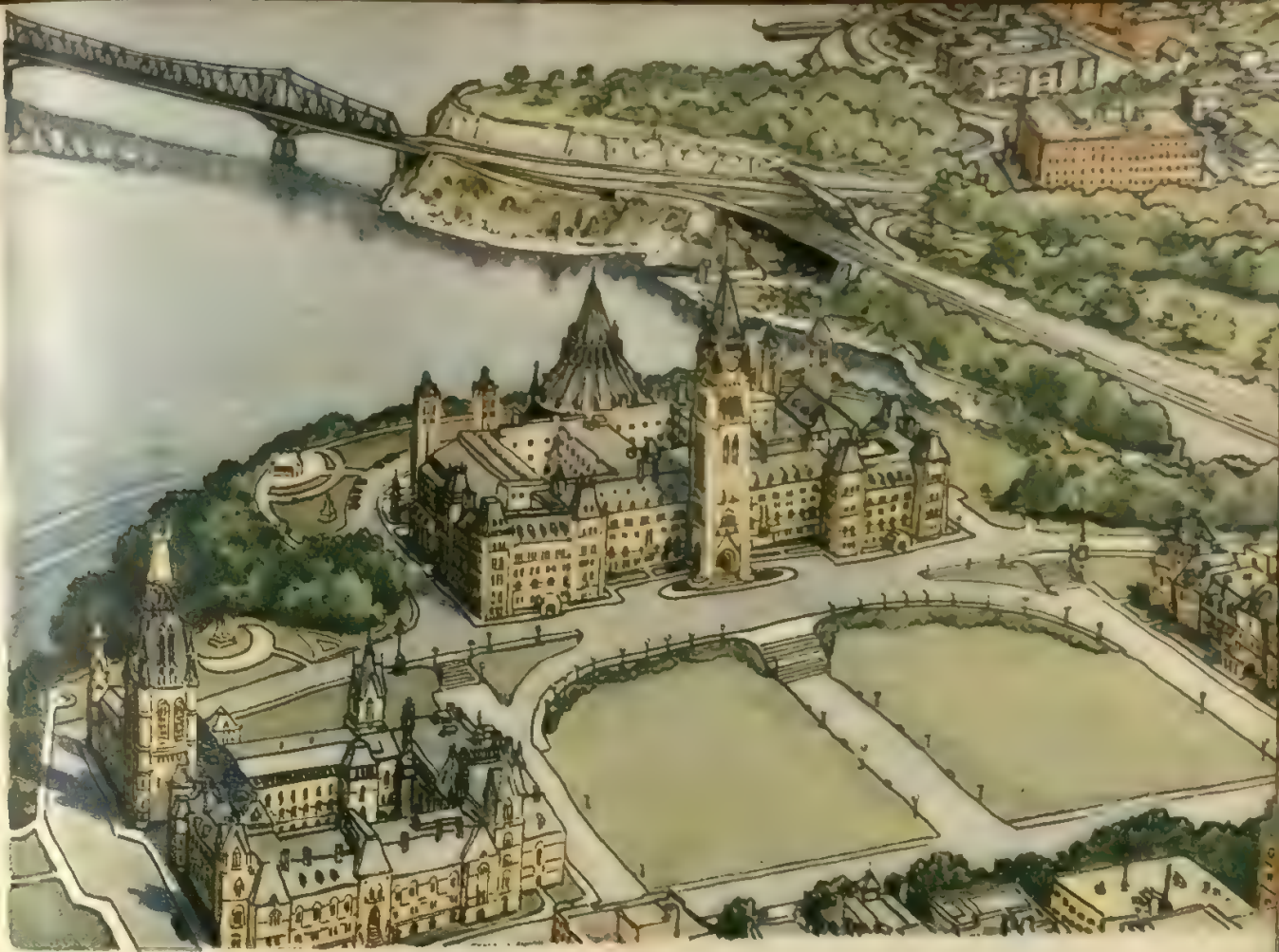


Figure 193. The Capitol of Canada

north-central Canada. This line is two-thirds of the way from the equator to the North Pole. Few people live in the cold and barren lands of the Far North. There is no seaport on the long and lonely northern coast.

Most Canadians live in the southern part of the country. This is suggested by the cities and railroads on the map.

The population of all Canada is about twelve million. It is a small population for so vast a country.

The two Ottawas. The large building in the center of the picture is the Capitol of Canada, in Ottawa (Fig. 192), the capital city. In this building the Parliament of Canada holds its meetings. Parliament is somewhat like the Congress of the United States. Though far from the center of the country, the capital is well located for most of the people.

The high tower above the main entrance to the Parliament building is Victoria Tower. It was named after Queen Victoria of England, who selected Ottawa as the capital of Canada. The building with many sides, just behind the Parliament building, contains the library of Parliament. The buildings in the foreground of the picture, on either side of the open space, are used by departments of the government.

Parliament Hill overlooks the Ottawa River—largest tributary of the river St. Lawrence (Fig. 192). The Ottawa was the first great highway from the St. Lawrence to the west. In any summer for at least 150 years, a person on the hill might have seen fur traders paddling along the river below. He might have *heard* them, too, for sometimes the wooded banks rang with their lusty songs.

In any summer for another hundred years



Figure 194. An Eskimo village in summer

National Film Board of Canada

a person looking down from the hilltop might have seen big rafts of logs float past. Most of them were on the way to Montreal, Figure 192, from the upper waters of the Ottawa. In later years, some of the rafts stopped at busy sawmills in Ottawa. The capital was first a sawmill town. Today, steamers run back and forth on the river every summer between Ottawa and Montreal.

Ottawa, the river, is an old highway. Ottawa, the city, is a young capital. The first Parliament met there in 1865.

The Dominion. Canada is called officially the "Dominion of Canada." It is divided into *provinces*. These are somewhat like states. Each province has its capital.

Canada is independent, though a member of the British Commonwealth. This is a group of free countries within the British Empire. Canada does not include the Atlantic island of Newfoundland, Figure 192, or Labrador, on the mainland coast. Together they form a British colony.

Eskimo land. The picture in Figure 194 is a view of a settlement of Eskimos near the coast of the Arctic Ocean. It might be hard to find in all Canada a view of a settlement more unlike the view in Figure 193. This picture of the lonely Arctic camp was taken in summer. The days then were long, but the sun was low in the sky even at noon. It was never really warm. Since winter, the ground had thawed out for only a few feet below the surface.

Most of the Eskimos of the camp were away on a hunting trip, searching for food. They kill musk oxen, caribou, and other animals. Sometimes they move their camp, trying to find better hunting.

In winter these Eskimos live in huts of snow and ice. At that season they hunt seal, walrus, and other sea animals. In all seasons their life is much like that of other natives of cold, treeless, Arctic lands.

The picture shows that these Eskimos are not completely shut away from the world to



Figure 195. On the coast of Nova Scotia

Department of Mines and Resources, Canada

the south. The white tents in the center of the camp were made in a factory somewhere. The barrels and boxes, too, came from outside Eskimo land. Few men from the outside world go to this barren land, however, except to mine valuable minerals.

Mining in the Far North. Gold once attracted many men to the Far North, near the Alaskan boundary. After rich placer deposits were found there some 50 years ago, men rushed in from all parts of the world. They faced great hardships in the hope of great gain. It was very hard for them to get to the region, and still harder to get in the supplies they needed.

In winter the cold was intense. Men thawed the gold-bearing gravels by setting fires, so they could wash out the precious metal. In spite of all difficulties, the output

of gold increased rapidly for three or four years. A bustling city of more than 10,000 grew up on a frozen peat bog. In a few years more, the richer gravels were worked out. Most of the miners left. Since then, some of the gravels have been worked over by using big dredges.

If rich deposits of gold are found again in the Far North, miners and adventurers will rush to them. It has always been so, in any land where gold was found. The difficulties would not be so great, however, as before. Steamers run on the Yukon River, Figure 192, far up into Canada during the short navigation season. And airplanes could take passengers and many supplies.

Near Great Bear Lake (Fig. 192), not far from the Arctic Circle, there are deposits of oil. They were worked during World War



Figure 196. A log dump on a frozen lake

II to meet the needs of the United States Army. This was done under an agreement with Canada. Most work stopped after the war. Sometime, these oil deposits may again be important.

Near Great Bear Lake there also are deposits of a mineral called pitchblende. Uranium is obtained from it. Uranium, in turn, was used in making the atomic bombs that helped win the war with Japan. In future, atomic energy may do in peace—in transportation and manufacturing and everyday life—far more than can now be imagined. There are few known deposits of uranium ore. The deposits near Great Bear Lake may help to bring about the “age of atomic energy.” In that age it may be hard to imagine people living anywhere in homes like those in the picture on page 216.

The southeastern corner. In the southeastern corner of Canada there are three

provinces—Nova Scotia, New Brunswick, and Prince Edward's Island (Fig. 192). They are called the *maritime provinces* because all of them border on the sea.

Not everywhere along the coasts of the maritime provinces is the scenery as fine as that in Figure 195. There are, however, many lovely stretches of coast. The harbor in this picture is in northeastern Nova Scotia. The land around the harbor is in the Cape Breton Highlands National Park. This land, and that on either side for many miles, is rich in its history as well as its scenery. The northeastern part of Nova Scotia juts far out into the Atlantic—so far that it has been called “the long wharf of Canada.” The end of the “wharf” is about 1000 miles nearer than New York City to Britain, on the other side of the Atlantic Ocean.

From villages up and down the coast, sturdy sailing vessels head out to sea to catch

fish along the Grand Banks. Cod, haddock, and halibut are the chief kinds that are caught. Smaller boats are used near the coast, the fishermen going to and from their work daily. Many people make a living by fishing.

Nova Scotia is rich in coal. In the northern part of the province there are layers of coal that extend far out under the floor of the ocean. Tunnels in certain mines reach out from the coast for several miles. In a way, then, some of the coal miners, like the fishermen, go to sea. Iron ore, as well as coal, is mined in Nova Scotia. And more iron ore, mined near the coast of Newfoundland, is brought to iron and steel mills that are close to Nova Scotia coal mines. As in the United States (p. 126), the iron ore is taken to the coal, not the coal to the ore.

The farms of the maritime provinces look much like those of northern New England. Attractive farm homes and well-cultivated fields are in the valleys, between wooded hills. Hay, oats, potatoes, vegetables, and apples are leading crops.

Halifax, Figure 192, is the largest seaport in these provinces. The city stands on a hill that slopes down to a fine harbor, open all the year. It is the chief winter port of Canada. This is because the great St. Lawrence highway is closed by ice in winter.

Along the great river. The St. Lawrence River is closed to navigation for about five months each year. In spite of that, the river always has been the greatest entrance way into Canada from the Atlantic, the greatest outlet from Canada to that ocean. Hudson Strait and Hudson Bay, farther north (Fig. 192), form a water route that leads far inland. But they are closed by ice so much of the time that they amount to little as a highway.

The oldest city on the St. Lawrence River is Quebec (Fig. 192). It was founded by the French in 1608, the year after Jamestown, Virginia, was founded. Quebec was in a good place to guard the St. Lawrence highway. The river was much narrower there than

nearer the ocean. The very name Quebec is said to have been an Indian word meaning a "narrows" on a waterway. High land, the edge of a plateau, or tableland, overlooked the river. It could be defended easily. Finally, the mouth of a small river that flows into the St. Lawrence at Quebec made a good harbor.

Quebec recalls today much of its long past. The narrow, crooked streets on the steep slopes of part of the city tell of the past. The crowded and quaint old buildings of stone or brick, with only a narrow walk in front, are reminders of the past. The fort that crowns the heights is inherited from the past. Quebec is a charming old city, like no other on the continent.

The next important city founded by the French on the St. Lawrence was Montreal. It was on an island topped by a hill, Mount Royal, that gave a wide view of the river and the wooded valley. It was opposite the mouth of the Ottawa River, early gateway to the west (p. 215). Most important, it was at the head of ocean navigation on the great river highway. As time passed, this last advantage, more than anything else, helped Montreal to forge ahead of Quebec. Today, it is far larger. It is, in fact, the largest city in Canada.

France lost the St. Lawrence Valley and all its possessions in North America to Britain more than 180 years ago. But many people of French descent live in Canada, especially in the province of Quebec. There they keep their language, and many of the habits and customs that were brought from France by early settlers. Both French and English are taught in the schools. Even the road signs are printed in both languages.

In the forests. Most of the land north and northwest of the St. Lawrence River is covered with forests. In these forests scenes more or less like the one in the picture on the opposite page are common. In this picture logs are being unloaded on the frozen surface of



Figure 197. Everyone helps

National Film Board

a lake. The logs were cut for pulpwood in the forest around the lake. The piles of logs are called a "dump." By spring the lake, which is three miles long and three-fourths of a mile wide, will be covered with logs dumped on the ice.

When the ice breaks up, the logs will be towed out of the lake into a stream and floated down the stream to a pulp mill. Paper will be made from the pulp. The logging, pulpwood, and paper industries of Canada are very large. Many American newspapers look to Canada for their supply of paper.

Future forests and ancient glaciers. Most of northeastern and north-central Canada, roughly the part between the St. Lawrence River and Hudson Bay, probably will always be used to grow forests. Except in some river valleys and places that once were lake beds, the land would not be good for farming.

Thousands of years ago, great glaciers, or "ice sheets," formed in northeastern Canada. They spread slowly south and southwest for hundreds of miles. As the ice sheets advanced, they carried away most of the soil and scoured the rocks below. They gouged out hollows, and rounded off the hills.

When finally the ice melted away, this part of Canada was left with thin, stony soils and many patches of bare rock. These soils will grow trees, but they are poor for farm crops. The climate, too, is poor for farming. Such scenes as the one in Figure 196 may be repeated many times through the long future, as generations of new trees grow up in the place of those cut down.

On the farms. The southernmost part of the province of Quebec is a land of small farms and large families. The picture above was taken on a valley farm of 100 acres near



Figure 198. In Montreal

Courtesy Canadian Pacific Railway

the city of Quebec. The French farmer and his wife, with the help of most of their 17 children, are cleaning and sorting potatoes and putting them in bags. It takes skill and much work to make a living for so large a family on so small a farm. The children seem to be enjoying the warm, sunny day out of doors. Well they may, for the winter ahead will be long and snowy.

Everywhere in southernmost Quebec and Ontario, potatoes are a leading crop. Other important crops are hay and oats and hardy fruits, such as apples. A full list of crops would be long. Many farmers raise hogs and fatten beef cattle. Many keep dairy cows.

Southwestern Ontario reaches down between southern Michigan and western New York (Fig. 192). The soils are good there, and the climate much better for mixed farming than farther north.

Trade and manufacturing. The picture above is a view across part of the city of Montreal. The huge building in the central foreground is a famous hotel. Other big buildings in the picture are used for banks and offices and stores. Montreal has the main offices of many banks, of leading insurance companies, and of the greatest railroad systems of the country. It is the largest trading and manufacturing city of Canada.

Montreal leads the cities of Canada in many ways, chiefly because of its location. That helped it greatly from the start. Montreal is at the head of ocean navigation (p. 219), nearly a thousand miles from the seaboard. It is at the foot of a great system of inland transportation by rivers and canals and lakes, by railroads and highways. It is the main doorway of the incoming and outgoing trade of Canada. Montreal's exports of grain



Figure 199. Cattlemen at work on the range

and meat and dairy products are immense.

Many places in southernmost Ontario and Quebec, besides Montreal, have advantages for trade and manufacturing. They, too, can get the products of near-by farms, forests, and mines, to use as raw materials in mills and factories. The largest asbestos mines in the world are in southern Quebec. The largest nickel mines in the world are in Ontario, northeast of Lake Huron. There are deposits of other ores, too, including copper and iron ores.

Coal and petroleum are lacking, but coal is imported from the United States. There is a great deal of water power. Electricity made from water power is distributed widely.

The largest city, other than Montreal, in this rich area of many people, many resources, and much trade and manufacturing,

is Toronto (Fig. 192). It is the second largest city in all Canada.

Farther west. The three provinces of Manitoba, Saskatchewan, and Alberta, Figure 192, are called the prairie provinces. It is only the southern part of them that is really prairie land. Across the northern part stretches the great forest belt of Canada. Forest work is far less important than in the eastern part of the belt, in Ontario and Quebec. Farming and raising stock are the leading kinds of work on the prairies, where most of the people live.

The men in the picture on this page have rounded up some cattle on rolling range lands in Western Canada. The cattle seem to be ready for market. Perhaps the men are driving them to some shipping point on a railroad. The picture suggests that the cattle



Figure 200. Part of a national park in the Canadian Rockies

have had good grazing. In dry years, the pasturage is not so good. There are many sheep ranches as well as many cattle ranches in western Canada, especially in the southwestern, drier part of Alberta.

The rainfall of the prairie lands is light, but over large areas the soil is rich. The growing season is short, but the summer days are very long. Crops grow rapidly.

Spring wheat is the main crop of the prairie farmers. In some years more than nine-tenths of all the land in wheat in all the Dominion has been in these three provinces. Most of the wheat is exported. Part of it moves east to the Atlantic, part west to the Pacific. The wheat farms and the farm villages along the railroads are much like the farms and villages in the northern Great Plains in this country.

Wheat is not, of course, the only crop

grown by the prairie farmers in Canada. Oats are raised as a feed crop. Barley, rye, and flax are less important crops. As years pass, more mixed farming is done.

Mining is not so important as in Eastern Canada. Coal is mined in Alberta. Some coal is mined, too, in Saskatchewan.

The largest city of the prairie provinces is Winnipeg (Fig. 192). It stands in the narrow passageway between Lake Winnipeg and the American boundary. For this reason it is the railroad gateway between western Canada and eastern Canada. It has large elevators and stockyards. It also has large wholesale houses. They handle many kinds of goods that are sold in the prairie provinces. The railroads made Winnipeg.

A mountain wonderland. The picture above gives a sample of the wonderful scenery



Figure 201. Fruit farming in British Columbia

National Film Board of Canada

of the Canadian Rockies. From the hotel terrace in the foreground, visitors look out on one of the mountain scenes that thrill thousands of motorists and railroad travelers every year. This view is in one of the principal national parks of Canada. It is easy to understand why the mountains are a paradise for sportsmen and campers. In one of the parks, automobiles can be driven to the edges of ice fields and glaciers.

The Rocky Mountains are much nearer the coast in Canada than in the United States. Of course, the high Canadian Rockies get much rain and snow. Many rivers flow from them—some to the west, others to the east.

Some water from these mountains finally reaches Hudson Bay.

The Pacific front. Canada always has faced eastward toward Europe. It does so now, for the most part. But it has a Pacific front in British Columbia (Fig. 192), as well as an Atlantic front. The Pacific front is growing rapidly in importance. Year by year the Pacific Ocean and the lands beyond mean more to Canada, as they do to the United States.

The largest Canadian port that looks out upon the Pacific is Vancouver (Fig. 192). It has a good harbor where railroad routes which cross the mountains meet sea routes.

Big grain elevators at the harbor in Vancouver tell of wheat farming in the prairie provinces. Lumber yards hold the products of the west coast logging and sawmilling industry. Fishing boats unload, in their season of work, heavy cargoes of fish. Ocean ships and coastwise vessels come and go. There are in fact many signs at Vancouver of fishing, milling, lumbering, grazing and farming as other parts of British Columbia. On such work the trade and manufacturing of the city depend.

Figure 201 shows young apple orchards in a valley in southern British Columbia. It shows one kind of "specialty farming." There are other kinds, even in this valley which seems to be filled with apple trees. Tomatoes, for example, are another specialty crop grown in the valley. At the right season, huge stacks of crated tomatoes could be seen outside a cannery in a town on the railroad from Vancouver which follows the river that is shown in the picture. Many kinds of farming are now carried on in British Columbia.

A final word. Canada is rapidly becoming one of the leading nations. It has a great future.

Canadians and Americans are much alike in many ways. They have many interests in common. They have common ideals for the welfare of North America. They carry on a

great work together for the future. They are as close each other as well as possible.

Things to Remember about Canada

1. Most Canadians are people who have grown from children. What is this?
2. Parts of southwestern Canada may become the most important city in the world. How have the people of this region?
3. Fishing, mining, and logging are leading things of the future. Tell me things about each of these.
4. The St. Lawrence River is the greatest highway into Canada from the Atlantic. What is the oldest city on the river? Why was it in a good place to grow the most important food? What is now the largest city on the river? What things have helped this city grow larger?
5. Much of the land between the St. Lawrence River and Hudson Bay will probably be used almost as soon as now. Why is this true? Why are the present farms of this region important to Americans?
6. Trade and manufacturing are back to back in the Great Northern and Great Southern. What advantages were there for the growth of this trade? For the growth of manufacturing?
7. The prairie lands of western Canada resemble the northern Great Plains in the United States. Show how life and work are much alike on the two sides of the boundary.
8. Americans and Canadians need to know each other as well as possible. Why?



Figure 202. Like a young American city

Figure 203. Like an old Spanish city



LATIN AMERICA

Many New-World Countries

New and old. The pictures on the opposite page show two cities in Latin America. Both are in the New World, but they look very different.

The picture at the top of the page shows part of Mexico City. The early Spanish explorers would be surprised if they could see this city. The automobiles, skyscrapers, fine shops, and many other things are as modern as similar things in the United States.

The city at the bottom of the page is Taxco, about 80 miles from Mexico City. The Spaniards of 400 years ago would be less surprised at seeing Taxco. It looks much like a city in old Spain.

Some of the houses in Taxco were built many years ago, by people who had moved to Mexico from Spain. Their new homes followed the style they knew in the Old World.

Through the years the people in Taxco have built other homes in the same style, with balconies and tile roofs. But there are many things in the city today that the explorers never dreamed of. Taxco has electric lights, telephones, shops for tourists, and a taxi or two.

Much of Latin America today is really very different from what the first explorers found. There, as in the United States, changes which seem like magic were actually brought about by much hard work.

Places and people. In Latin America there are many kinds of places and many kinds of people. Some of the people live beside great rushing rivers, others live in lowlands by the sea, still others in high mountains or in

deserts. There are as many different kinds of places in Latin America as in the United States.

Among the many kinds of people, there are farmers, fishermen, shopkeepers, miners, and factory workers. These people are of several races. Many are white people. There also are millions of Indians and many Negroes. A few settlers have come to Latin America from Asia.

In the United States, one may forget that Indians were the first Americans. When the first white men landed, there were not many Indians in this vast land. There are not many today. In Latin America, the Indians cannot be forgotten. Millions were living there when the explorers came, and millions are living there now. Many Spanish and Portuguese explorers married Indian women. Their descendants, of mixed races, are called mestizos.

All people in Latin America have one thing in common, whether they are Indian, mestizo, Negro, or white. They all live in the New World, the American continents. They all have a right to be called Americans.

The people of the United States are the only ones, however, who commonly are called Americans. Often people in Latin America speak of the people of the United States as *norteamericanos*—that is, “North Americans.” Yet they seldom speak of themselves as “Latin Americans” or “South Americans.” Instead, it is the custom to use the name of each country. So, in Mexico, people call themselves Mexicans. The people who live in Brazil call themselves Brazilians, and so on.

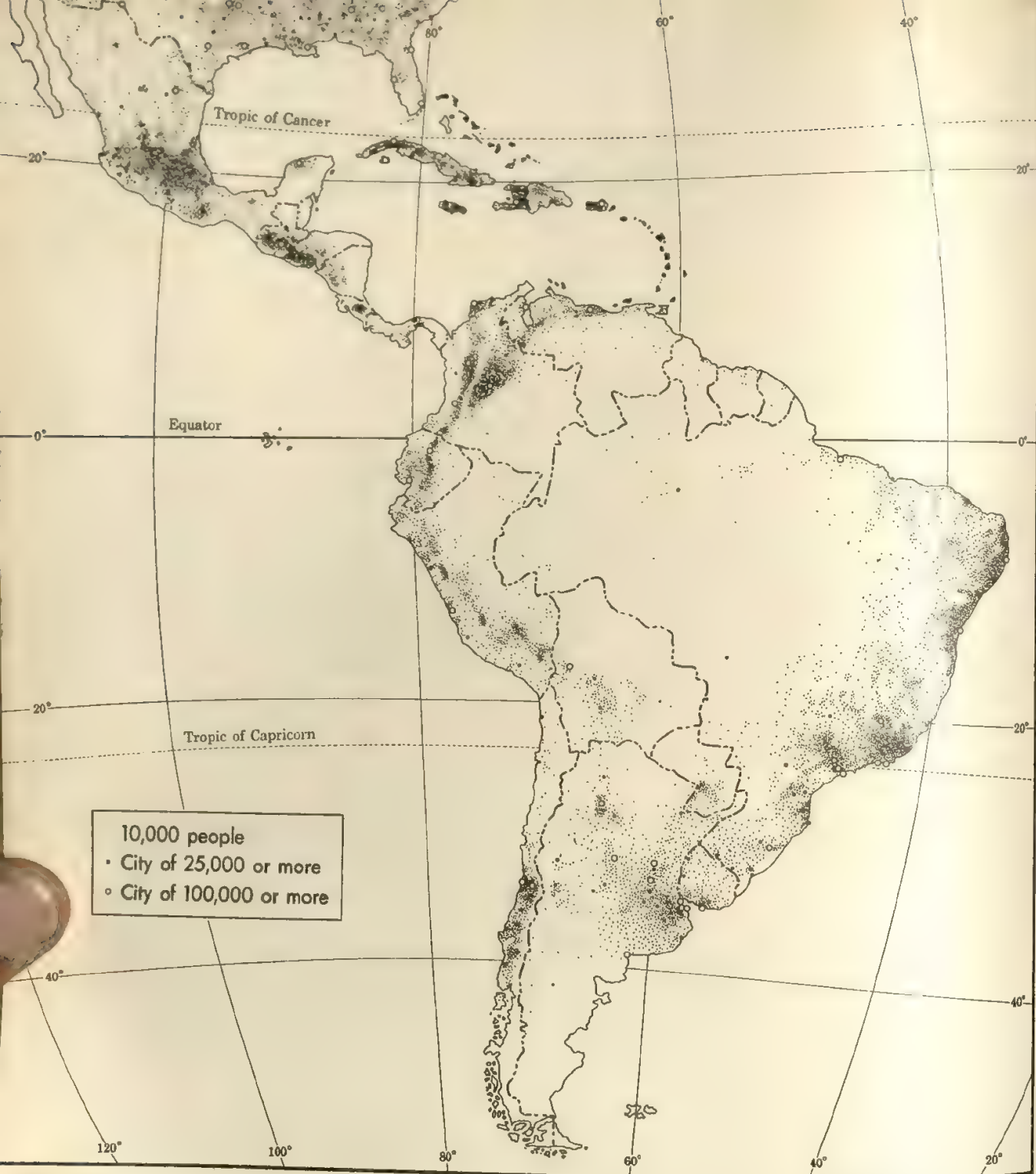


Figure 204. Where the people live

Based on map in "Latin America," by Robert S. Platt,
published by McGraw-Hill Book Company, Inc.

Exploration and settlement. The early chapters of this book told of many problems faced by settlers in the United States. Other stories might be told of the people who pioneered in Latin America. In many places

the coastal lowlands were hot and rainy and covered with dense forests. There the people suffered from disease. The Indians were unfriendly. It was very hard to clear the forested land for fields and roads.

Little by little men explored the mountains of Latin America. In the mountains they could escape the heat of the lowlands, and live with less danger of disease. There, too, the ground was cleared for farms with much less labor.

In many places, mineral wealth made the mountains even more attractive to the explorers and settlers. Most of the Spaniards were looking for gold and silver, and for large settlements of Indians who could be made to work as miners. The Spaniards found both rich minerals and great numbers of Indians in central Mexico and also in the mountains of western South America. Very quickly these areas became the most important of the Spanish colonies.

It is true that explorers were willing to struggle through swamps and forests, if necessary, in their search for wealth. But they naturally tried to choose the less difficult routes of travel, and the better places to live. So in Latin America, as in the United States, the land and climate had much to do with the settlement of the country.

A map of population. Even today, Latin America is not settled evenly. The dots on the map, which stand for people, are close together in some places, far apart in others. Much of South America is an empty land.

When the map of population is compared with the globe map (Fig. 3), it is clear that the mountains have attracted most of the people. On the mainland between the United States and South America, the lowlands are almost empty, but many people live in the highlands. Also along both the eastern and western coasts of South America, many people live in mountains. Few people live in the low interior of South America.

Many people do live comfortably in the lowlands in the southern part of South America. There the weather is cool or even cold part of the year. Some of these lowlands are as far from the equator as is part of the United States.

In the tropics. Most of Latin America is in "the tropics"—that is, between the Tropic of Cancer and the Tropic of Capricorn. Each "Tropic" is an east-west line $23\frac{1}{2}$ degrees from the equator. One is south of the equator, the other is north of it. All areas of land or sea, between the two Tropics, are said to be in the tropics. It is about as far across this tropical belt as it is from Texas to Alaska.

Tropical lands are commonly thought of as warm or hot lands. Everywhere in the tropics the sun at noon is high in the sky. On June 21 the noon sun is directly overhead at the Tropic of Cancer. Then it is summer north of the equator, and winter south of the equator. On December 22, winter has come to the United States, but at that time it is summer south of the equator. On that date the noon sun is directly overhead at the Tropic of Capricorn. Outside of the tropics, the sun is never directly overhead.

Since a very large part of Latin America is in the tropics (Fig. 204), it is not surprising that so many people in Latin America live in mountains. Everywhere in the world, it usually grows cooler as one goes higher and higher above sea level. Even near the equator, some very high mountain peaks are always covered with snow and ice.

Colonies and free countries. For about three hundred years, all the land in Latin America belonged to countries in Europe. Now only a few small areas remain as colonies. Most of the land is divided among 20 independent countries. These 20 countries of Latin America occupy about as much land as the two countries of Canada and the United States together.

* The next three chapters will describe Middle America. This is a name given to the islands of the West Indies and to the mainland between the United States and the continent of South America. Mexico and the countries of Central America occupy this mainland.

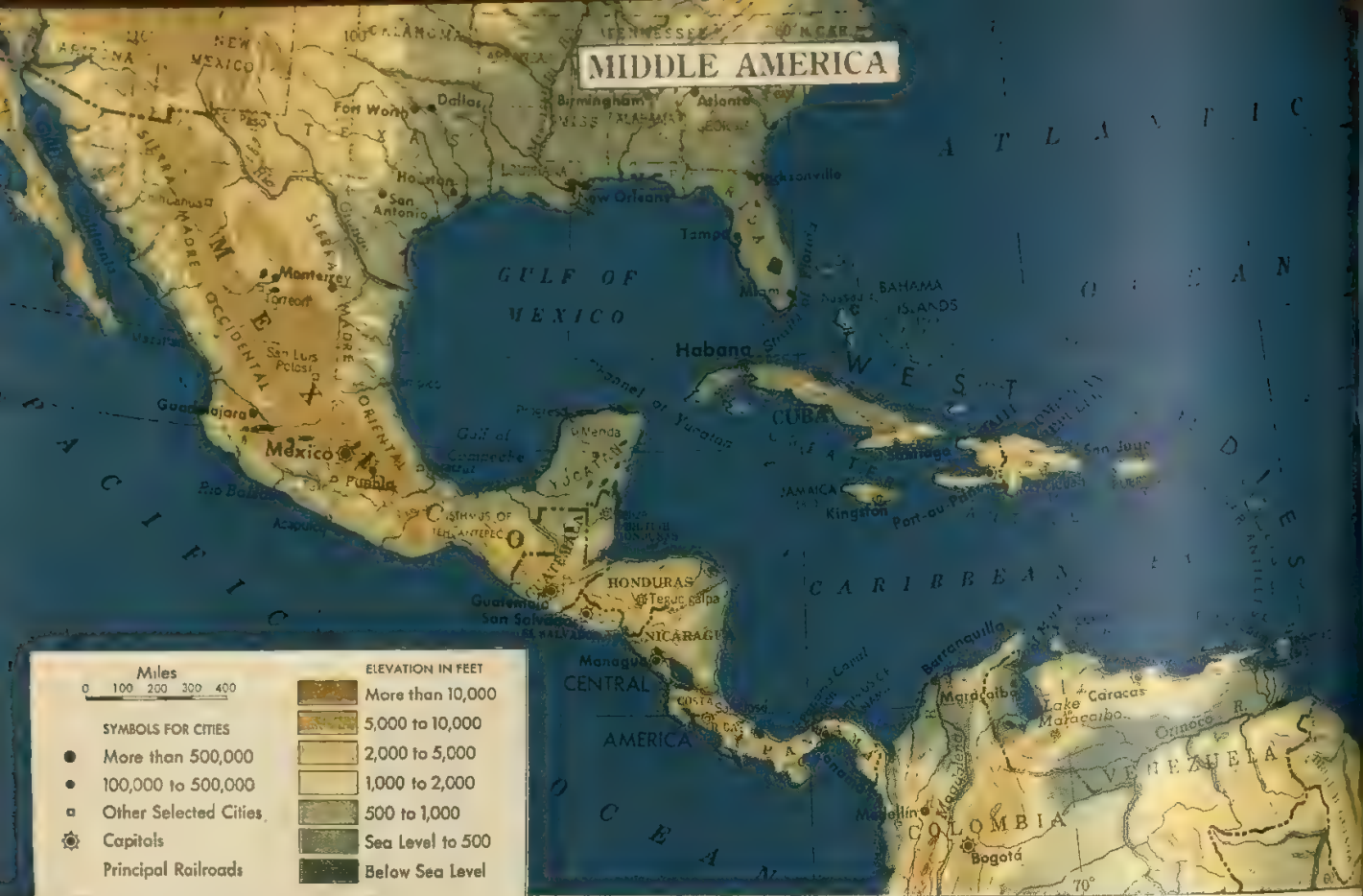


Figure 205.

Mexico

A near neighbor. Mexico is our nearest neighbor in Latin America (Fig. 205). The land in northern Mexico looks much like the land in southwestern United States. On both sides near the boundary line, the land is dry. It is used only for grazing, except where fields are irrigated.

Mexico is a land of mountains. The map shows that a wide belt of highlands reaches almost from coast to coast. Most of the people in the country live within sight of mountains. The lowlands by the sea are narrow in most places.

High and steep mountains, called the Sierra Madres, rise both at the eastern and western edges of the highland belt (Fig. 205).

The eastern Sierra Madre is called "oriental," which is the Spanish word for eastern. The western Sierra Madre is called "occidental," which is Spanish for western. Between the two Sierra Madres is a wide plateau, broken by many mountain ridges.

There are few homes and few people in the northern half of Mexico. But several million people live on a central plateau around Mexico City, the capital of the country (Fig. 205). Few people live in the mountains in the southern part of Mexico. Outside of the port cities, the lowlands are almost empty. Everywhere, the people have reasons for living where they do, and for making a living in the ways they do.

The Dry North

Cattle country. The cattle ranch in the picture is in the highlands of northern Mexico. It is about 50 miles south of the United States boundary. There is so little grass in this dry land that many hundreds of acres are needed to support such a large herd of cattle.

It is roundup time on the ranch. The cowboys have ridden for miles, from side to side of the big ranch, to round up the cattle and drive them to the corral. The man who built the round corral drove a stake in the ground and tied one end of a long rope to the stake. Then he stretched the rope to its full length and walked in a circle, while marking the place for the corral fence.

Cattle can be raised cheaply in the Dry North of Mexico. The land is not expensive, since most of it is too dry for farming. No shelter is needed for livestock during the mild winters. No hay is gathered for winter feed. Grass grows all through the year.

Sheep, goats, and cattle. Some of the ranchers who raise cattle in northern Mexico also have small herds of goats and sheep.

These animals furnish milk, wool, and meat. In the more dry and stony lands, there are many goat ranches. But most of the livestock raised in northern Mexico are cattle. Most of the cattle go to market in the United States.

Mines. In northern Mexico thousands of people make a living from mining. The Mexican plateau is rich in copper, gold, silver, lead, and other minerals. One of the largest smelters in the world is at Chihuahua (Fig. 205). This city is a great center for both ranching and mining.

Oasis of farm land. Strangers traveling through the Dry North are often surprised by a sudden change in scenery. For miles they may have traveled through grazing lands and unused desert lands. Then suddenly they come to an irrigated oasis where nearly every foot of ground is used for crops.

The picture in Figure 207 shows part of a big oasis near Torreon (Fig. 205). Torreon is a busy city that has grown up within the oasis. Where much land is irrigated, many people can make a living from it.

The dry land in the background of the picture receives only the few showers that happen to fall there. The farmers in the fore-

[231]

Figure 206. A roundup on the ranch



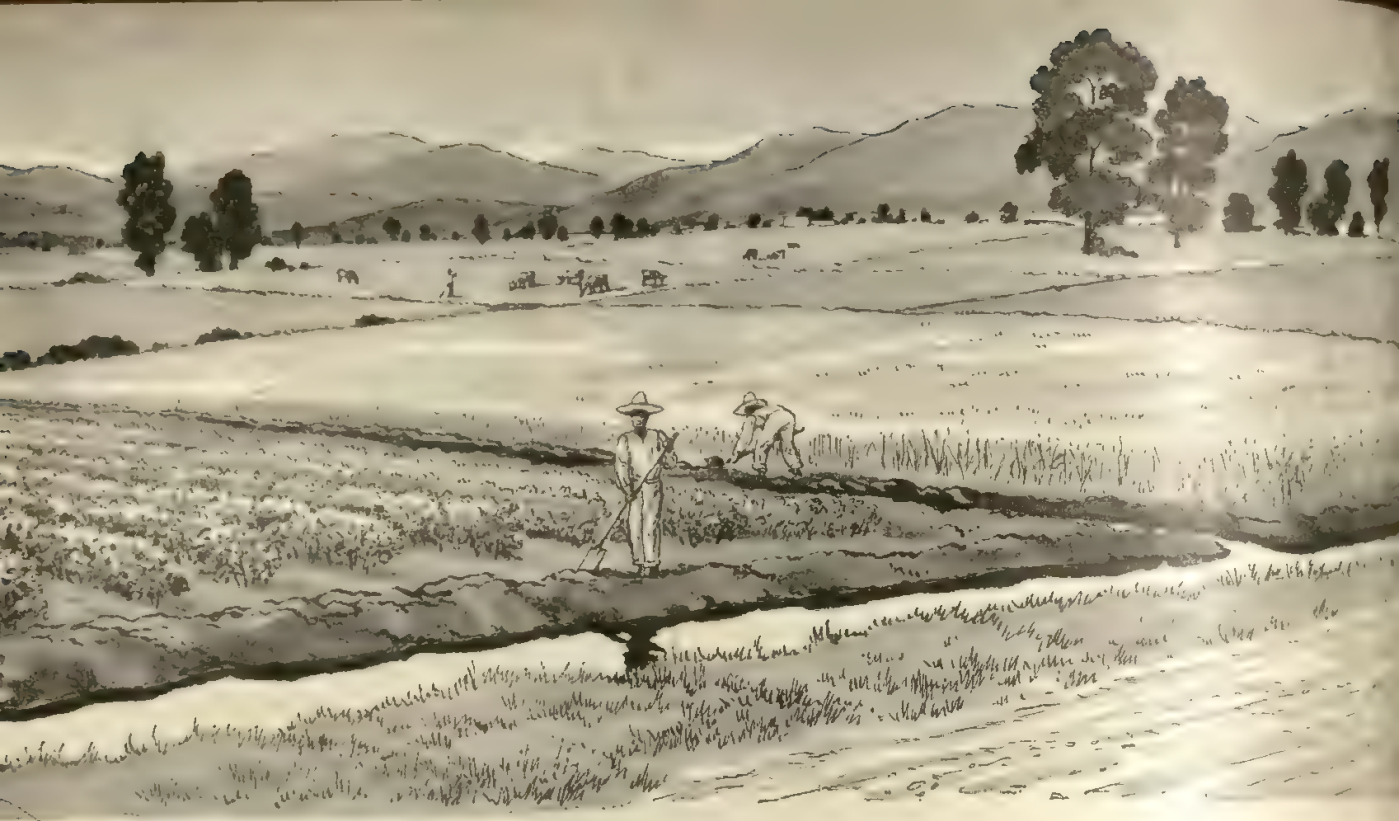


Figure 207. In an irrigated oasis.

ground are growing a fine crop of cotton by using water from a stream. This water comes from distant mountains, which are high enough to catch rain from passing winds. Some other fields in this oasis are irrigated from wells. About half of all the cotton grown in Mexico is grown near Torreon.

Oases from coast to coast. In northern Mexico, there are many oases, scattered from the Gulf of Mexico to the Pacific Ocean. Few of them are as big as the one near Torreon. Some are narrow ribbons of irrigated land along small streams where farmers raise just enough food for themselves. In other oases, thousands of acres are planted to money crops such as cotton, vegetables, and sugar cane. Nearly all the oases get water from streams that rise in the Sierra Madres.

In winter hundreds of carloads of vegetables are shipped from Mexico to markets in the United States. Some of these vegetables are grown in river oases in western Mexico, along the eastern coast of the Gulf of California (Fig. 205). The water for irrigation is taken from rivers which rise in the steep

Sierra Madre and flow across the lowland to the Gulf. Sugar cane also grows well along this coast. It needs sunny days, much water, and a long growing season.

The map on page 230 shows a railroad which runs from part of the lowland along the Gulf northward to the United States. This railroad is the "road to market" for the farmers of the coastal oases. Without it, the farmers would need to grow some crop, such as cotton, which does not need to be transported quickly to market.

Monterrey. The most important city of the Dry North is Monterrey. The map on page 230 shows the location of the city. Here early travelers found a pass that led from the lowland, up through the Sierra Madre, to the plateau. Later a railroad was built to the city and up through the pass. Today several railroads meet at Monterrey.

In recent times, automobile tourists from the United States have helped Monterrey to grow. Thousands of them have discovered the fine stores and hotels of the city.

Much of Mexico's iron and steel is made

in Monterrey. Trains bring coal from the near-by lowland and iron ore and other minerals from the plateau. Mountain streams furnish water power for making electricity. Part of the fuel used in Monterrey is gas, piped from Texas.

The factories of Monterrey turn out many things such as furniture, dishes, cloth, and, of course, things made of iron and steel. Many of these goods find a market in the cities and villages of northern Mexico and on the ranches. The highways and railroads make it possible to ship some goods from Monterrey to distant places in the country. Monterrey, a city of the Dry North, is also an important city for all Mexico.

North and south of the border. Throughout the Dry North of Mexico, travelers from the United States find much to remind them of the land north of the border. Cowboys herd cattle on huge ranches. Farmers work in irrigated fields. Miners dig deep in the earth for valuable ores. Men drive trucks and run trains. People are busy in factories and stores. People in northern Mexico make a living, then, in the same ways that people do in southwestern United States. The two countries and the two peoples are neighbors.

Along Mexican Highways

The Pan American Highway. To automobile tourists, the best known highway in Mexico is the Pan American Highway. To them, it is Mexico's main street. The map shows that the Pan American Highway reaches from Texas to Mexico City and beyond. If finished as planned, this highway will reach finally from Texas to southern South America. But it is not likely that this will take place for many years.

From Texas to Mexico City. Monterrey is the first important stopping place on the Pan American Highway, south of the border. In many places between the border and Monterrey, grazing lands stretch to the horizon



Figure 208. Main highways of Mexico

on both sides of the highway, with not a house in sight.

For many miles southeast of Monterrey, the highway was built near the edge of the mountains. Hour after hour, southbound travelers see the steep Sierra Madre close at hand. At one place there is a little sign beside the road with the words *TROPICO DE CANCER*. It is easy to guess that this is Spanish for Tropic of Cancer. Here travelers pass into the tropics. But, of course, there is no sudden change in weather or scenery.

About halfway between the Tropic of Cancer and Mexico City, the Pan American Highway climbs up and up, through the Sierra Madre, Figure 205, from the hot lowland to the cool plateau. On most days of the year, travelers drive on this part of the highway for hours through cloud and rain. When the weather clears for a few minutes or when they get above the clouds, they see some of the finest mountain scenery in the world. The picture on the next page shows one little part of this mountain drive. In many other places along the highway, the mountains are higher and steeper, the valleys deeper, and the road more crooked.

Mountain village. The village in Figure 209 is about halfway up the steep Sierra Madre. Once the people in the village were almost cut off from the rest of the world. They were curious about strangers. Then the Pan American Highway was built. Now the



Figure 209. Life along a mountain highway

village people scarcely look up as automobiles roll by.

The coming of the highway brought other changes. Many of the men in the village were hired to help build the road, and to keep it in repair. Yet such things as houses and ways of farming have changed little.

The walls of the houses in the picture are made of slender poles. The roofs are thatched with long grasses. It rains frequently, so the houses need such roofs to keep out the rain. The weather is never cold, so the houses need not be built for warmth.

To the people of the village, farming is still the most important way of making a living. The little patches on the steep slopes in the distance are fields. There the farmers raise nearly all the food the village needs. It is easier near this village to clear land on a side hill than in the bottom of a valley.

The highway was not built, of course, just to serve this village or the dozens of other little villages through which it passes. The few people in these villages could never pay for so expensive a road. The real purpose of this section of the Pan American Highway is

to join Mexico City with Monterrey and the United States. Before the highway was built, no one could drive a car from the United States to Mexico City.

On the plateau. Up on the plateau there are long stretches where the Pan American Highway is nearly straight. Here and there sharp ridges divide the plateau into wide flat valleys called basins. Much of the land in these basins is almost level and is used for farms.

As travelers drive over one sharp ridge, they suddenly see before them a wide spreading city. This is Mexico City, the capital and the largest city in the country. Near Mexico City, the traffic moves more slowly. Automobiles pass through village after village, where people and animals are crossing the road all day long.

Travel in Mexico. The map in Figure 208 shows most of the important highways in Mexico. The map also shows that large areas are without highways. Half the villages in the entire country are not reached by either railroad or highway. Automobiles can reach some of these villages over rough trails during the dry season. Most of the village people in Mexico travel by oxcart or donkey or on foot.

Of course, mountains have held back the building of both highways and railroads. It took hundreds of hours of work to build the highway in Figure 209 for even the short distance shown in the picture. In many places, there would be few goods or passengers to haul, even if expensive highways or railroads were built.

Today, airplanes are flying over the mountains of Mexico. Men can fly from Mexico City to Progreso, Yucatan, in a few hours. Not one road or railroad connects these two places (Figs. 205 and 208). But the airplane makes little difference to most people in the villages. Each village needs a road or railroad to the next village more than it needs an air route to a distant place.

The Heart of Mexico

The Central Plateau. The land around Mexico City is called the Central Plateau. Guadalajara is near the western edge of the Central Plateau, and Puebla is near the eastern edge (Fig. 205). This plateau is in the southern part of the highlands which extend almost from coast to coast. As Figure 210 shows, more rain falls in the Central Plateau than in most of northern Mexico.

The Central Plateau is called the heart of Mexico. One reason is that so many people live there. The population map in Figure 204 shows that this region is settled more thickly than any other area in Mexico. The Central Plateau is dotted with dozens of cities and hundreds of farm villages. Mexico City alone has more than a million people.

The Central Plateau in other times. Before white men came to the American continents, the Central Plateau was the heart of an Aztec Indian country. In those days, Indian cities and villages dotted the land. Thousands of Indian farmers worked in the fields.

After the Spaniards came, the lands of the plateau became the property of Spanish landowners. But the Indian farmers went on with their work. For hundreds of years, the Central Plateau has been a densely peopled land.

In the cities. There are many reasons why so many people live both in the cities and in the farm villages of the Central Plateau. Mexico City is the capital. It brings many people together for the work of government. Thousands of people work in the factories, stores, and offices of the city. The picture in Figure 202 shows a new business district west of the older business center. Of course, most of Mexico City is not so modern as the street shown in the picture.

Mexico City is growing fast. In recent years, many new factories have been built. The city is well located for manufacturing. It is almost in the center of the country.

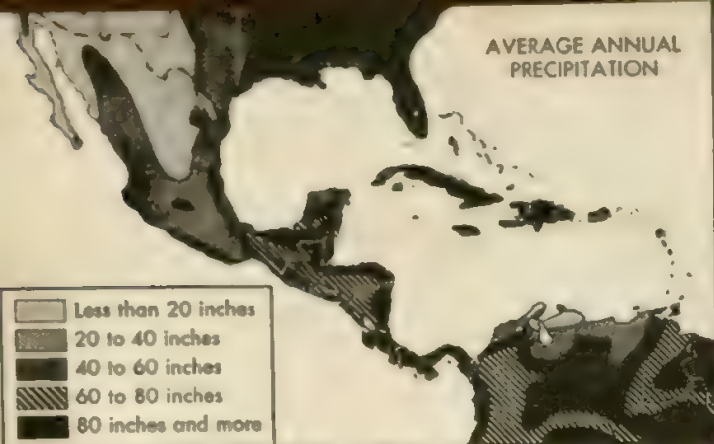


Figure 210. Precipitation in Middle America

Figure 211. A workshop in a patio

C. W. S.



where many highways and railroads meet. Goods can easily be collected in the city and distributed from the city. And half of Mexico's people live within a short distance.

Guadalajara and Puebla are also important cities of the Central Plateau, although neither is so large as Mexico City. Both cities are surrounded by fertile farm lands. Both are well known for their factories and workshops. Besides these cities there are, of course, many smaller cities in the heart of Mexico.

Figure 211 shows one of many workshops in Puebla. This shop is in a patio, or open courtyard, as are most workshops in Mexico. Outside, the building looks like any other house along the street.

The workers in this shop make pottery and tiles of many kinds. Some are brightly colored. In the picture, jars of various shapes are drying in the sun. One man is talking to a customer who may have come to buy a flower pot. Throughout the country many of the things the people use are made in such workshops.

In the farm villages. Although several million people live in the cities of the Central Plateau, a still larger number live in the farm villages of the plateau. The Central Plateau has many advantages for farming. Most of the land is rich, almost level, and not covered by forest. Figure 210 shows that from 20 to 40 inches of rain fall each year. There is enough rainfall for many crops. Some fields can be irrigated from mountain streams.

The heaviest rainfall in Mexico is in the southern part of the eastern lowlands (Fig. 210). All through the year the weather is hot and rainy. Many diseases attack people and livestock. It is hard to clear the dense forest that covers the ground almost everywhere. Few farmers live there.

Village of farmers. The picture on the opposite page shows a farm village near Mexico City. In many ways this village is like most other farm villages in the heart of Mexico.



Figure 212. A farm village on the Central Plateau

The farm houses in the picture are very plain. The walls are made of adobe. Most of the roofs are made of tile. Adobe is good building material where rains are not heavy. It is also cheap, for it can be made by the farmers themselves.

Each farm family lives in one or two rooms which face a patio. As the picture shows, the outside windows are small and few. Since the weather is pleasant most of the year, much of the work of the home is done in the patio. Here, too, farm tools, supplies, and animals are kept.

Cornfields surround the village in the picture. In all Mexico, more acres are planted to corn than to any other crop. Many farmers raise beans between the rows of corn.

The corn and beans are raised chiefly to eat and not to sell. They form a large part of the Mexican farmer's daily food. One of Mexico's best known foods is the tortilla, a corn pancake.

A plant which looks like cactus is growing along the edge of one of the fields in the picture. This plant is called maguey. It is

raised as a money crop. The sap of maguey is used for making a drink, widely sold in Mexico.

Farm life. Mexican village farmers depend upon themselves for much of their living. They raise nearly all of the food they need. Boys herd flocks of sheep and goats on the rough mountain slopes. These animals furnish meat, milk, wool, and goat's hair.

Farm work is hard work. Most farmers cannot afford modern machines. Commonly they use oxen to pull the plows at planting time. From then until harvest, much of the work is done by hand.

The farmers do their trading on market days in the larger villages. Once each week hundreds of people gather from miles around bringing vegetables or little sacks of corn or beans to sell. In return they may buy cloth, simple dishes, or some tools. All day the people visit back and forth. Market day in Mexico is a kind of picnic day as much as a day for business.

Recent changes. Until a short time ago, most farm land in Mexico was in large farms

called haciendas. In Mexico a small farm is called a rancho. The men who own no land but who work on the haciendas and ranchos are called peons.

Some years ago, the Mexican government took over the lands belonging to many of the haciendas. Large community farms were organized to take the place of the haciendas. On a community farm the land belongs, in a way, both to the government and to the people who work the land.

The village in the picture on page 237 is a community farm village. The farmers work the fields together. No field belongs to any one farmer.

Almost one-third of all the farmers in Mexico now live on community farms. About as many more are independent farmers living on their own ranchos. Somewhat more than a third still are peons who do not own any land. The peons are some of the poorest people in the country.

The Southern Mountains

Few people. The population map on page 228 shows that few people live between the Central Plateau of Mexico and the border of Guatemala. This is not surprising, for much of southern Mexico is a mountainous land that is cut by streams into countless valleys and ridges. The Rio Balsas (Balsas River), shown in Figure 205, divides the Central Plateau from the southern mountains.

Crossings. The map on page 230 shows only one line of travel across southern Mexico, from sea to sea. This crossing is at the Isthmus of Tehuantepec, where a lowland divides the southern mountains into two parts. Here, a railroad connects a port on the Gulf of Mexico with a port on the Pacific Ocean. Before the Panama Canal was built, some men thought that this would be an important crossing. Now both harbors are quiet and little use is made of the equipment along either water front.

The highway map on page 233 shows a road which leads southward from Mexico City over the mountains to Acapulco on the Pacific coast. Many years ago the Spaniards used this port for Pacific trade (p. 71). Now the fine natural harbor is little used. No railroad reaches Acapulco. The mountains almost cut this city off from the rest of the country.

Mountain farms. Farming in the southern mountains is like that on the Central Plateau in some ways and different in other ways. In both places corn is grown for food on almost every farm. The same kinds of simple farm tools are used. Flocks graze on the poorer land. Farmers live in villages and raise most of what they need for a living.

The greatest difference is in land. On the plateau most of the fields are nearly level. In the southern mountains, much of the farm land is in scattered patches on steep slopes. In some of the lower valleys, southern farmers grow such crops as bananas, sugar cane, and coffee, together with corn.

Eastern Lowlands

Down to the coast. Travelers from Mexico City, on the plateau, to Veracruz, on the coast, see three kinds of scenery. Up on the cool plateau, they see adobe houses and corn fields and wheat fields. This is tierra fria, the cold land. In Spanish, tierra means land, and fria means cold.

The second kind of scenery is about half-way down the mountainous side of the plateau. Here travelers see orange trees and coffee trees, flowers and bananas and corn. This is the tierra templada, the temperate land, neither too hot nor too cold.

The lowland along the Gulf of Mexico is called the tierra caliente, or the hot land. Tall grasses or forests cover much of it. The port city, Veracruz, is the largest city of the tierra caliente. Here the first Spanish explorers landed. Ever since, Veracruz has been the eastern gateway to Mexico.



Figure 213. A camp in a rich oil field

© Ewing Galloway

Treasures underground. To the Spanish explorers, the hot lands of the eastern lowland had little value. They were looking for gold and silver. So they pushed on to the mountains and the plateau. They little dreamed that oil was hidden underground in the tierra caliente and that oil would later be one of Mexico's greatest treasures.

The picture above shows an oil camp in the eastern lowland near Tampico. The men are workers in one of the richest oil fields in the continent. Millions of barrels of oil have been shipped to other lands from Tampico. As the map on page 230 shows, this city is on the coast, about midway between Veracruz and the Rio Grande.

Mexico also is rich in the minerals the Spaniards were looking for. Although widely scattered in the Sierra Madres and in the plateau, there are many mines of silver, gold, copper, lead, and other minerals. For many years Mexico led all the world in the production of silver. The famous city of Taxco, Figure 203, was built with the wealth of Mexico's mines. Today thousands of people in Mexico make a living because Mexico has great treasures underground.

Farming in the tierra caliente. The northern part of the eastern lowland is a grazing land. The southern part is covered by a dense tropical forest. The rainfall map on page 236 suggests a reason for this difference.



Figure 214. Drying henequen fibers in the hot sun

Gendreau

In the tropical forest, a few farmers live in little clearings, and workers gather chicle for chewing gum. Sugar cane, bananas, and pineapples are grown on scattered plantations near Veracruz.

Throughout the tierra caliente, most farmhouses have thatched roofs and walls made of poles or grass. Nearly every farmer raises his own food, including corn. In Mexico the "corn belt" reaches from the cool plateau down to the tropical lowland.

Plantations of Yucatan. As the map on page 230 shows, the Yucatan peninsula is almost entirely a lowland. The rainy forested southern part is thinly settled. The drier northern part has plantations, cities, and rail-

roads. The northern part leads the world in producing henequen.

The men in the picture above are workers on a henequen plantation in Yucatan. They are hanging henequen fibers on frames, to dry in the sun. Most of this fiber is made into twine. At harvest time in many parts of the world, this twine is used to tie around bundles of grain. Farmers in the United States call it "binding twine."

The henequen plant looks somewhat like a cactus. The fiber is in the large thick leaves. At harvest time the bottom leaves are cut off and crushed in a mill. Then the fibers are removed and washed and finally dried in the way shown in the picture.

The northern part of Yucatan is well suited to growing henequen. The land is easily cleared, for there is no dense forest. The rainfall is light, the soil is of the right kind, and the land is nearly level. Yucatan is well located for ocean shipping to the United States, which is the most important market for henequen.

Mexico—Rich or Poor?

Land and mines. When the Spanish explorers found silver and gold in Mexico, they believed that they had discovered a very rich country. But today, many of the Mexican people are poor. Is Mexico, then, rich or poor? The answer is that it is both.

Mexico is rich in oil and minerals. But Mexico is poor in land that is good for farming. In all the country only eight acres out of every hundred are planted to crops. The other 92 acres are not well suited to farming because they are too dry, too wet, too hot, too mountainous, or even too cold.

If most Mexicans were miners and if only a few were farmers, the problem would not be so serious. But it is just the other way. Less than two workers out of every hundred are employed in all the mines and oil fields in the country. Most of the Mexican people are farmers and there is not enough good land for all of them.

Many Mexicans believe that some farmers could make a better living if they used the land differently. They need better seeds, new machines, and more irrigation. Already some of these changes are taking place. Better foods like fruit and vegetables are improving the health of people who used to eat little more than corn and beans. Today in many places in Mexico, the village schools are helping to teach better ways of living and making a living.

Buying and selling. The United States is Mexico's best customer. We buy silver, gold, cattle, henequen, and many other things.

Most of Mexico's imports are from the United States, too. Machines and iron and steel are the leading imports.

The United States buys products of Mexican mines and fields. Mexico buys more than anything else, products of our factories.

Things to Remember about Mexico

1. "People in northern Mexico make a living in the same ways that people do in southwestern United States." Tell about three of these ways. Which ways are common in dry lands only?

2. Mexico needs many more railroads and highways than it now has. Tell about the changes a new highway may bring to a village. What has held back the building of railroads and highways?

3. "The Central Plateau is called the heart of Mexico." Half of the people in the country live there, in cities or in farm villages. What are three advantages for farming there? Give two reasons why Mexico City is well located for manufacturing. How does the map (Fig. 204) show that many people live on the Central Plateau?

4. In the tropics there are three climates, called *tierra caliente*, *tierra fria*, and *tierra templada*. Describe the scenery between Mexico City and Veracruz that goes with each climate. What crop is grown in all three?

5. "Mexico is rich in oil and minerals. But Mexico is poor in land that is good for farming." Why are most of the people not helped by the mineral riches? Why is most of the land not good for farming? What changes would help the farmers make a better living?

Exploring and Finding for Ourselves

1. Use the map in Figure 205 to explain why the harbor at Acapulco is little used.

2. Choose a picture in this chapter which suggests the kind of scenery one would expect to find in most of southern Mexico. Give reasons for your choice.

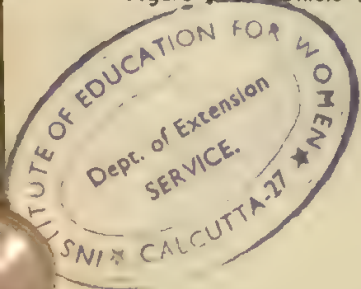
3. In what direction from Mexico City is the noon sun on June 21st? At Christmas (p. 229)?

4. Is most of Mexico lowland or highland? How does the map show this?



Figure 215 Chicle for gum, by airplane

Gendreau



Central America

Six small countries. The land between Mexico and South America is called Central America (Fig. 205). All together, the six countries of Central America are not as large as Texas. But Central America is a very long strip of land. It is farther from Mexico to South America than from Chicago to Florida.

A belt of highlands extends almost all the way through Central America. Most of the people live in these highlands.

Guatemala

In the lowland forest. The picture above was taken in a clearing in the lowland forest

along the east coast of Guatemala. The Indian name for Guatemala is "the land of the trees." From coast to coast, forests cover much of the land. In the mountains, some of the trees have been cut down to make room for farms. But in the lowlands many of the forests are almost untouched.

The forest clearing in the picture is a landing field for airplanes. It is far from any highway or railroad. The pack animals are bringing loads of chicle which men have gathered from trees in the forest. Airplanes are very useful in Guatemala, for they can fly over mountains and forests where there are no roads.



Figure 216. In a quaint mountain village

Courtesy Middle America Information Bureau

Some clearings in the lowland forests are small garden patches, cultivated by farmers. Other clearings were made by lumbermen. The largest clearings along the coasts were made for banana plantations. Bananas are an important export of Guatemala. Later in this chapter there is a story of a banana plantation in near-by Honduras. The Guatemala plantations are much the same as the one described in that story.

Farmers in the highlands. The village in the picture on this page is in the cool highlands, the *tierra fria* of Guatemala. The people on their way to market are Indian women. More than half of all the people of Guatemala are Indian farm people who live in the highlands.

Corn is growing beside one of the thatched houses in the picture. In the highlands of Guatemala, the most important crop is corn. Occasionally a field is planted to wheat or

some other small grain. But a special celebration is held each spring on the day that corn planting begins. Corn and beans are eaten at almost every meal.

Sheep find pasture on steep slopes, and provide wool for clothing and blankets. A little trading is done in the village market. These Indian farmers raise almost everything they need for a living.

Guatemala and coffee. The coffee lands of Guatemala are between the hot lowlands and the cool highlands. This is the *tierra templada*, "the temperate land." Guatemala City, the capital, is in the *tierra templada*.

The climate of this temperate land is just right for coffee. There is plenty of rain, but no frost or extreme heat. Nearly all the rain falls in summer. The dry, sunny winter is used for harvesting and drying the coffee. Drying coffee in the open air would be difficult if there were frequent rains.



Figure 217. A coffee plantation

United States Department of Agriculture

The soil of the *tierra templada* is one of the best in the world for growing coffee. It is called volcanic soil, because part of it came from the ashes of volcanoes. Most coffee in Central America is grown on volcanic soils.

The real Guatemala. Some people think of Guatemala as a coffee country, because coffee is Guatemala's leading export. Other people may think of Guatemala only as a banana country or a corn country. Guatemala is all three, and much more. No one is really well acquainted with a country if he has learned only about crops and exports. He also should be able to think about how the people live. The real Guatemala includes the people of Guatemala.

El Salvador

Coffee and mountains. El Salvador is a little country on the Pacific coast, southeast of Guatemala (Fig. 205). It would take four countries the size of El Salvador to cover

Illinois. The capital of El Salvador is San Salvador.

The picture shows a coffee plantation in the mountains of El Salvador. In the winter the wide platforms are used for drying coffee. This plantation is much like those in Guatemala.

Many kinds of work must be done on a coffee plantation. The workers plant young trees, cut weeds, fertilize the soil, and, of course, harvest the coffee. The coffee berries do not all ripen at the same time. So the workers must go through the fields as many as three times in order to get all the berries when they are ripe.

Honduras

Banana lands. The picture on page 245 was taken on a banana plantation on the northern coast of Honduras. On that coast and along most of the coasts of Central America, the climate and soil are well suited

to growing bananas. This is not true of all places in the tropics. The banana plant requires warm weather and moisture all through the year. The soil must be well drained and fertile. Central America has become so well known for its bananas that the countries are often called "the banana republics."

Harvesting bananas. Men work in teams when harvesting bananas. In the picture, the man holding the long pole is the "cutter." With a knife on the end of the pole, he cuts just deeply enough into the banana stalk so that it bends toward the ground. Then he cuts the bunch of bananas free from the stalk.

The "backer" puts the bunch of bananas on his back and carries it to a branch railroad. In other places on the plantation, hundreds of other workers are harvesting bananas in the same way. Finally, many thousands of bunches are brought by rail to a port, loaded on a ship, and carried across the sea to market.

In Central America most of the workers on the banana plantations are Negroes from islands in the West Indies. These men can stand the hot, wet climate better than Indians brought from the highlands.

New plantations. In recent years, many new banana plantations have been started on the west coast of Central America. The chief reason is that plant diseases have attacked the crop in many places on the Caribbean coast. Today, banana plantations are scattered along both coasts of Central America, from Guatemala to Panama.

During much of the year, rain-bearing winds blow in from the Caribbean Sea. These winds lose a large part of their moisture in crossing the central highlands. For this reason there is less rain on the west coast than on the east coast. On the west coast much money must be spent for irrigation. And many of the bananas must be shipped farther and at greater cost.

Other parts of Honduras. The banana plantations along the coasts are not connected by railroad with the interior of the country (Fig. 205). Tegucigalpa, the capital, is in the interior. Except for this city, and for scattered farms, ranches, and silver mines, most of the interior of Honduras is an empty land.

British Honduras

A small colony. The map on page 230 shows that British Honduras is on the coast northeast of Guatemala. Here the hot, rainy lowland is covered with dense forest. A few forest products such as chicle and mahogany are sold each year. But logging is very difficult. Much of the land is swampy. Many of the more valuable trees are widely scattered, and it is hard to build roads in the dense forest.

Figure 218. Harvesting bananas

© Lanks, from *Three Lions*



Nicaragua

Lowland crossing. During the gold rush to California, about a hundred years ago, many people crossed from the Caribbean Sea to the Pacific Ocean through Nicaragua as well as at Panamá (p. 73). River steamers carried passengers up a river and across a lake in Nicaragua (Fig. 205). On the west side of this lake, travelers changed to coaches drawn by horses, and rode over the hills to a village on the Pacific coast. Ocean ships carried them on to California.

For many years men have talked of digging a canal in this Nicaragua lowland so that big ships could sail from sea to sea. So far, no digging has been done.

The lowland crossing is the heart of Nicaragua. Here are most of the people, and the largest cities, including Managua, the capital.

Outside of the lowland crossing, the lands and other resources of Nicaragua are little used. Some bananas are raised along the hot and swampy eastern coast. The interior highlands are empty, except for scattered coffee farms, cattle ranches, and mines. Nicaragua could support many more people.

Most of Nicaragua's trade is with the United States, and gold is the chief export.

Costa Rica

Rich highlands. Costa Rica was given its name by early Spanish explorers who sailed along the eastern coast. They called the land "Costa Rica," which means "rich coast." But for hundreds of years most of the people have lived on the fertile plateau in the central part of the country. The central highlands have proved to be richer than the "rich coast."

The plateau of Costa Rica is now a land of coffee. As in Guatemala and El Salvador, the climate of the *tierra templada* and the rich volcanic soils are well suited to growing coffee.

In Costa Rica most of the coffee is grown on small farms. The owners themselves work in the fields. Most of these coffee farmers are white people. Some are well educated.

In the lowlands. In recent years, men have cut away part of the forests in the lowland lowlands of Costa Rica. In the clearings they have made banana plantations like those in Honduras and other countries in Central America. Coffee remains, however, the leading money crop of the country.

The picture in Figure 219 was taken in the Pacific lowlands of Costa Rica. This less rainy coast is better for raising livestock than is the Caribbean coast. Many of the cattle in the picture will be driven to market in the cities of the highlands, perhaps to San José, the capital.

The outside world pays little attention to cattle raising in Central America, because few animals or animal products are exported. But, to the Central Americans, raising cattle is important work.

Panamá

Away from the canal. Travelers who pass through the Panamá Canal see little of the country called Panamá. This country stretches both east and west from the canal.

Panamá is an Indian word meaning "plenty of fish." Along the coasts and rivers, there are many Indian villages where the people make a living by fishing. Farmers who live in scattered villages raise rice, corn, and other food crops in forest clearings. In the less rainy Pacific lowland, there are cattle ranches and lumber mills. A few banana plantations are scattered along both coasts. But most of the land is little used. The heart of Panamá is along the great Panamá Canal.

Six Countries or One

Trying to unite. Several times in the past, men have tried to unite all six Central Amer-



FIGURE 219. Tending cattle on the Pacific coast

ten countries into one country. All of these attempts have failed.

Central America is so long and narrow and mountainous that there is no convenient central meeting place. Most of the railroads are short and lead to the coast. Nearly all the countries produce the same kinds of things, so there is little trade or travel back and forth.

The use of airplanes is growing rapidly in Central America. But, of course, airplanes cannot be used everywhere with profit. Central America remains a divided land of six separate countries. Probably it will always be divided.

Things to Remember about Central America

1. *Central America is a divided land of six separate countries.* Give reasons why attempts to unite them have failed.

2. *Coffee and bananas are important money crops in Central America.* What land and

weather are best suited to growing each crop? Tell how bananas are harvested. Why were many new plantations started on the west coast? What is one difference between coffee growing in Costa Rica and in El Salvador and Guatemala?

3. *To many people in Central America, food crops or livestock are more important than money crops.* Why does the outside world pay little attention to cattle raising, for example? Tell about farm work in the tierra fria of Guatemala. Are money crops important to Indian farmers there?

4. *Most people in Central America live in the mountains.* What advantages do they have there?

Exploring and Finding for Ourselves

1. Turn to the globe map on page 4. What does the globe suggest as one reason why Panama was chosen for an ocean to ocean canal instead of either Mexico or Nicaragua?

2. With the help of the map (Fig. 205), tell why airplanes are useful in Central America.



Figure 220. Winter in the sugar bowl of Cuba

Courtesy Pan American Airways

The West Indies

A chain of islands. Thousands of islands are scattered in a long chain between Florida and South America. The entire chain is called the West Indies (Fig. 205).

Most of the islands of the West Indies are too small to be shown on the map. Not one person lives on some of these tiny islands. Four of the islands in the West Indies are large. More than a million people live on each of these four large islands.

The largest island in the West Indies is Cuba. It is several times as large as Puerto Rico.

Cuba

Land of sugar. Throughout the world Cuba is famous for sugar. Cuba exports more sugar than any other country. More of the land in Cuba is planted to sugar cane than to any other crop.

The men in the picture above are working on a sugar plantation in Cuba. They are loading their cart with sugar cane. When the cart is filled, the oxen will pull it across the field to a narrow railroad. Several such narrow railroad lines meet at a huge sugar

mill where the cane is made into sugar. Most of the sugar moves to the coast by rail, and then by ship to the United States. This country is Cuba's greatest market.

Weather, land, and sugar. It was winter, but not cold, when the picture of the sugar-cane harvest was taken. In Cuba, as in most of the West Indies, winters are warm and not rainy. Sugar cane needs a long growing season. If the crop is harvested early, there is less sugar in the cane.

On the sugar plantations in Cuba, it is never cold enough for frost. After harvest, the stalks of cane grow up again like grass that has been cut. One cane planting may do for five or ten or more years.

Winter in Cuba is a good time for harvest work. The dry, mild weather of winter is much more pleasant for the workers than the hot, rainy weather of summer. Sugar cane spoils quickly if it is harvested during a rainy season. Also, when it rains often, the carts get stuck in deep mud in the fields.

Many things besides climate help to explain why Cuba is a "land of sugar." Most of the soil is rich and well drained. Much of the land is nearly level and easily farmed. No part of the island is far from ocean transportation. The world's biggest sugar market is the United States, and Cuba is next door to it.

The workers on the plantations in Cuba live in simple huts, made from materials close at hand. Most of the huts have roofs made from palm leaves. The workers have little gardens where they raise most of their own food, such as corn, bananas, and vegetables. Some workers own or rent land, grow sugar cane on it, and sell the cane to owners of sugar mills.

Not all sugar. Of course, not all of Cuba is planted to sugar cane. In recent years many orchards have been planted there. Tobacco also grows well on certain kinds of soil in western and central Cuba. It is planted in the hot rainy season so that it will grow

rapidly. Like sugar cane, tobacco is harvested during the mild and sunny winter.

For every acre in crops, including sugar cane, there are six acres in Cuba which are not cultivated. On some of this land, farmers raise thousands of cattle. Many more acres of land could be used for crops if there were more workers. Even as it is, thousands of men are brought from near-by islands, every year, to help with the sugar harvest.

Some Cubans work in mines in the mountains at the southeastern end of the island. There, men have found valuable minerals such as manganese, copper, chromium, and iron ore.

Habana, gateway to Cuba. Cuba meets the world at Habana. This is the capital of the country and its largest city. Habana is directly south of the west coast of Florida (Fig. 205). The city is so close to the United States that it is easy for tourists from this country to get there. As we should expect, winter is the tourist season in Habana.

Habana is Cuba's most important trading city. Many ships use its fine harbor. To Habana come many of the things Cuba gets from other countries. These imports include, of course, machinery and cloth and fuel, but food heads the list.

Cuba sells money crops such as sugar and tobacco, and buys much of the food that the city people need. The country people raise most of their own food.

Haiti

One island—two countries. Besides Cuba, there are only two independent countries in all the West Indies. They are Haiti and the Dominican Republic. These two countries are side by side on an island southeast of Cuba (Fig. 205). Haiti occupies the western end of the island.

Small farms in the mountains. From the air, Haiti looks very unlike Cuba. In Haiti, the land is mountainous and the farms are

small. The picture on page 251 shows one of these small mountain farms.

Corn and bananas are important food crops on this farm, as they are on most other farms in Haiti. The picture shows several bundles of corn which the farmer has hung in the trees to dry. He raised the corn in one of the clearings beyond the houses. This farmer raises cotton and coffee, too. With a few pounds of each he buys the simple things which he needs, such as cloth, tools, and salt.

Most of the people of Haiti are Negroes. The French, who settled in Haiti many years ago, brought thousands of Negro slaves to work on their plantations. Later, the Negro slaves drove out the French and took over the country. The plantations were abandoned as the workers moved into the hills. There they raised most of the things they needed. French is still the language of the country.

Changes. In recent years, new plantations have been started in the narrow lowlands by the sea. Yet most of the people of Haiti still are farmers who live much to themselves in the mountains. Haiti has so many of these farm people that it is one of the most thickly settled places in the American continents.

The Dominican Republic

Neighbors, but different. Although Haiti and the Dominican Republic are side by side on the same island, they are very different. The Dominican Republic is about twice as large as Haiti and the land is just as good. But the Dominican Republic has only about half as many people. Most of these people are either white or of mixed races. Few are Negroes.

In the past some people have moved east from crowded Haiti into the Dominican Republic. Many more would like to move there, but the Dominican Republic does not want them. This has caused serious trouble between the two countries.

Farms, large and small. The Dominican Republic has many mountains, but much more lowland than its neighbor, Haiti. On one strip of almost level lowland the large sugar plantations are much like those in Cuba. Of course, there are small farms and plantations of other kinds in the Dominican Republic.

Many cattle are raised on ranches in the mountains. Pastures stay green the year around. Throughout the West Indies, raising cattle or other livestock is an important way of making a living. Cattle furnish milk and meat and leather, and pull plows and carts.

Jamaica

Negro people. The third largest island in the West Indies is Jamaica, just south of Cuba. Jamaica belongs to Britain. Except for Cuba and the island shared by Haiti and the Dominican Republic, every island in the West Indies belongs to some other country. Of course, Puerto Rico and the Virgin Islands belong to the United States (Fig. 205).

Jamaica is one of the islands on which more than a million people live. Nearly all of them are Negroes. In many places in both Central America and the West Indies, the Negroes of Jamaica are well known. They have gone to Central America to work on banana plantations. Thousands helped build the Panamá Canal. Many go from Jamaica to Cuba each year to help with the sugar harvest.

Jamaica farmers. Farming in Jamaica is much like farming in some other parts of the West Indies. The largest money crop is bananas. The Negro farmers of Jamaica also raise sugar, coffee, and cacao. Many cattle are pastured on lands not used for crops.

Each crop is grown where the land and climate seem most suitable for it. The map on page 252 shows that a large part of Jamaica is a highland, with narrow strips of lowland



Figure 221. A little farm in tropical mountains

along the sea. Most of the plantations are in the lowlands.

The lowlands near Kingston are so dry that the farmers there must irrigate their crops of sugar and bananas. On the northeastern side of Jamaica, the same crops grow well without irrigation.

In a year more than 100 inches of rain fall on the northeastern coast of Jamaica, and only about 30 inches fall at Kingston on the southern coast. In Jamaica, as in the Hawaiian Islands (p. 209), the mountains make the difference in rainfall. The northeast winds

lose most of their moisture as they cross the mountains.

Many other islands of the West Indies are like Jamaica in having most rain on their northeastern slopes. In some islands, there are few mountains high enough to cause rain. This is true of Cuba.

Bahamas

Many, but poor. When Columbus discovered the Americas, the first land he saw was a little island southeast of Florida and



Figure 222. Central highlands and coastal lowlands

northeast of Cuba. This island is part of a group of thousands of scattered islands called the Bahama Islands (Fig. 205). People live on only a few of them. The entire group belongs to Britain.

The Bahamas are dry islands. The soil is thin and poor. The only important crop raised for export is tomatoes.

Most people in the islands make a living in one way or another from the tourist business. The Bahamas are warm enough in winter and near enough to the United States so that many tourists from this country spend winter vacations there.

The Lesser Antilles

Greater and Lesser. Cuba, Puerto Rico, and Jamaica, together with Haiti and the Dominican Republic, are sometimes called the Greater Antilles. The thousands of islands between the Greater Antilles and South America are known as the Lesser Antilles.

Although all the islands of the Lesser Antilles are small, they are not all alike. Some have high rain-catching mountains, others are low and dry. Some have many people, others have few or no people. Throughout the Lesser Antilles the food and money crops are much like those in islands already described.

Trinidad is farther south than any other island in the West Indies. It is very close to the coast of South America. This location has helped Trinidad become a great trading center both for the islands and the near-by mainland. Recently Trinidad has also become an important stopping place for airplanes.

More than half of Trinidad's workers are on plantations or in sugar mills. Others work in the oil industry, for Trinidad has many oil wells. An old story tells of an "asphalt lake" in Trinidad from which men cut chunks of asphalt. The story is true, but only a few hundred people make a living from this work.

The Netherlands owns a few little islands in the Lesser Antilles. Curacao, just off the coast of Venezuela, is the most important of these islands. Part of the harbor at Curaçao is shown in the picture. Millions of gallons of oil from Venezuela are refined at Curaçao each year, before being shipped to distant markets. The picture shows both refineries and storage tanks. In the whole world, few such small islands are as important as Curacao.

The West Indies and the World

Important islands. Some of the countries in Europe are much interested in the West Indies. These countries buy bananas, sugar, tobacco, and other products of the islands. There are other reasons, too, why European countries are interested in these islands. The West Indies are on the main routes of ocean travel between Europe and the Pacific by way of the Panamá Canal. There is oil in the West Indies, and oil is used for fuel in many ships.

The United States is especially interested in the West Indies because of the Panamá Canal. On some of our possessions in the West Indies, military bases have been built to help protect the canal. During World



Figure 223. Curacao, a little island with a great trade

Courtesy Netherlands Information Bureau

War II, the United States received from Britain the right to build bases on some British islands in the West Indies. This made our island guard still stronger.

Things to Remember about the West Indies

1. *"Cuba is famous for sugar."* Give five reasons which help to explain why. Use the map to explain why Cuba is well located for trade.

2. *Haiti and the Dominican Republic are side by side on one island, but are very different.* Explain one difference in land. In people. What has caused trouble between the two countries?

3. *Many countries are interested in the West Indies.* What is the special interest of the United States? Give two reasons why other countries are interested, too.

Exploring and Finding for Ourselves

1. Find Trinidad on the map of Middle America* (Fig. 205) and on the globe map (Fig. 3). Use these maps to show why the island is important as a trading center, and as a stopping place for airplanes.

2. Name the independent countries in the West Indies. How does the map show this? Are there any independent countries in the Lesser Antilles?

3. Turn back to page 211, and read again the story of Puerto Rico. Which picture in this chapter reminds you of Puerto Rico? Is Puerto Rico more like Cuba or Haiti?

4. What one money crop is important in Cuba and Hawaii and in Puerto Rico? Are these islands about the same distance from the equator (Fig. 3)? Explain what this means in weather, and in growing sugar cane.



SOUTH AMERICA

Miles
0 100 200 300 400 500

SYMBOLS FOR CITIES

- More than 1,000,000
- 500,000 to 1,000,000
- 100,000 to 500,000
- Other Selected Cities
- ☼ National Capitals
- Principal Railroads

ELEVATION IN FEET

- More than 15,000
- 5,000 to 15,000
- 2,000 to 5,000
- 1,000 to 2,000
- 500 to 1,000
- Sea Level to 500

Colombia—Venezuela—The Guianas

In South America. Most of the people of Latin America live in the continent of South America, shown on the map on the opposite page. South America is somewhat smaller than North America. Yet South America is more than twice as large as the United States.

The map shows different kinds of places in which South Americans live. The people in the picture live near the high Andes Mountains. The little fields are irrigated by water from mountain streams. Other South Americans live in the Guiana Highlands and in the Brazilian Highlands. These are the most important three mountain areas in the continent.

South America also has three great low-land areas along three great river systems, the Orinoco, the Amazon, and the Rio de la Plata. The Amazon lowland is larger than either of the others.

Of course, the people and the ways in which they live differ greatly from place to place. They are not alike in all the mountains or in all the lowlands. The coffee farmers of the Brazilian Highlands would not feel at home among the Indians who live in the high Andes. In the lowlands at the mouth of the Amazon River, near the equator, the weather is warm or hot throughout the year. There, people live in simple houses built for coolness. In the lowlands at the mouth of the Rio de la Plata, far south of the equator, winters are chilly and houses are built for warmth.

Most of this chapter is about Colombia, Venezuela and the Guianas, along the northern coast of South America. The map shows that each of these areas has both highlands and lowlands. So, within each country, many differences in both lands and people are to be expected.

Colombia

A corner of South America. The South American country nearest to the United States is Colombia. Although it fills only a corner of South America, Colombia is not a small country. From the west coast of Colombia to the eastern boundary of the country is almost as far as from Chicago to New York City.

All travel between the United States and Colombia is by sea or air. The map on the opposite page shows that Panamá is a land bridge between the rest of Central America and Colombia. No one uses this bridge when traveling to South America, for no roads

Figure 225. At the foot of the Andes



or railroads have been built from Central America to South America.

Ocean travelers who sail along the coasts of Colombia really see little of the country, for they see only the coastal lowlands. As the map shows, the Andes Mountains divide Colombia into three great sections, coastal lowlands, central highlands, and eastern lowlands. Most of the people live in the highlands, and most of the country's wealth is there. Bogotá, the capital, is far up in the cool Andes.

Lowlands by the sea. Outside of the port cities, only a few people live in Colombia's lowlands by the sea. Along the Caribbean coast, the vast forest is broken by thousands of acres of grasslands. On these grasslands many herds of cattle find pasture. Within the forest, a few Negro and Indian farmers have made clearings where they raise corn, bananas, and several kinds of vegetables. Some of them gather rubber or nuts from forest trees in order to have something to trade for cloth, tools, and other things.

Not long ago the Caribbean coast of Colombia was famous for its banana plantations. Shipload after shipload of bananas went to the United States and other countries. But a plant disease attacked the crops, and most of the plantations are now abandoned.

New wealth. Some years ago engineers found a treasure underground in the lowlands. It was oil, huge quantities of oil.

When oil first was found, some men wondered if it could ever be worth much, for the oil fields are hundreds of miles from the coast. There were no railroads or highways on which to carry the oil. But engineers, helped by thousands of workers, laid long pipe lines through the swamps and forests. Now thousands of barrels of oil flow to the coast each day in two pipe lines. Yet only a few workers are needed to produce or to transport the oil. This new industry will not bring many people to live in the lowland.

Cities of the coast. The map on page 211 shows three coastal cities which are gateways to Colombia. They are Barranquilla and Cartagena, on the Caribbean coast, and Buenaventura, on the Pacific coast. In all three cities, most people make a living from trade between the highland heart of the country and the outside world. Even to these coastal cities, then, the highlands of Colombia are more important than the lowlands.

Barranquilla is much the largest city on the coast, for no other is so well located for highland trade. Barranquilla is near the mouth of the Magdalena River. This river is the great highway between the highlands and the ocean. At Barranquilla freight from ocean ships can be loaded directly into river steamers. About half of all Colombia's foreign trade passes through this city.

Land of coffee. Above the hot coastal lowlands of Colombia, but not so high as Bogotá, is the tierra templada. This is Colombia's land of coffee. The picture shows part of a coffee farm. The boy is stirring the coffee beans so all of them will dry evenly.

Coffee grows well on mountain slopes like those in the background of the picture. The climate is excellent for growing coffee. Frost never comes, and the weather is neither too hot, too dry, nor too rainy.

In many other countries, coffee is grown on huge plantations where one man owns thousands and thousands of trees. But in Colombia, most of the coffee is grown on small farms like the one in the picture. The owner of this farm takes special care of his trees. Instead of gathering all the coffee at once, whether it is ripe or not, this farmer carefully picks only the ripe berries. He goes back a second time and a third time in order to get all the crop. This means more work, but the evenly-ripened coffee brings high prices.

Colombia is famous for its coffee. No other money crop in the country is worth so much. In all the world, only Brazil raises



C James Sanders

Figure 226. Drying coffee for export

more coffee than Colombia. And the coffee from Colombia brings a higher price than that from most coffee-growing countries.

Of course, growing coffee is not the only work on a coffee farm in Colombia. Nearly every farmer raises corn, vegetables, and fruit for his own use. The picture shows banana trees near the farmhouse.

Factories in the land of coffee. The sale of large amounts of coffee to other countries has brought much money to the coffee growers of Colombia. With this money they can buy many manufactured goods. So, as coffee farming increased in recent years, many

new factories were built in the coffee land of Colombia. These factories make such things as textiles, shoes, flour, and simple tools.

Many of the raw materials used in these factories are not produced in Colombia. They are bought from other countries with money which came from the sale of coffee. Some cotton used in the textile factories comes from the farms of Colombia itself. Many factories are run by electric power made at near-by waterfalls in the Andes.

Bogotá. Above the coffee land of Colombia is the tierra fria, where frosts come in winter and even summers are not hot. Here



.Figure 227. A famous plaza in Bogotá

is Bogotá, the capital of the country and by far the largest city.

Few capitals in the world are so hard to get to, except by airplane. Bogotá is about 8700 feet, or more than a mile and a half, above sea level. In the picture, part of the Andes Mountains rises high above the city.

In the *tierra templada*, the people of the cities are busy with factory work and trade. Such work goes on in the capital, too. But Bogotá is best known as a city of government and churches and schools. Many writers, artists, and students live in Bogotá. In the picture, a famous old church faces a beautiful plaza.

Many Indians live in Bogotá. Others come from the country to the markets in the city. Most of these Indians have little to do with the government or the schools or the fine buildings. Some are workers on big plantations. On level fields between the mountain ranges they raise crops of wheat, barley, and

potatoes. Bogotá needs all the food grown near-by, and more. But grain brought from other lands is very expensive by the time it is hauled up the mountains to the city.

For hundreds of years, ways of farming have not changed much in the *tierra fría* of Colombia. Indians were farming there when the first Spaniards came. Oxen pull the simple plows and at harvest time tramp the grain from the straw on threshing floors. On the high mountain slopes, Indian shepherds find pasture for their flocks. There, it is too cold for any crop to grow well.

By air or land or river. The picture on the opposite page shows two ways of carrying goods and passengers in Colombia—by airplane and by river steamer. Big planes fly from the coast to Bogotá in a few hours. Smaller planes, like the one in the picture, reach out-of-the-way places. This plane has stopped for fuel and freight at a little river village.

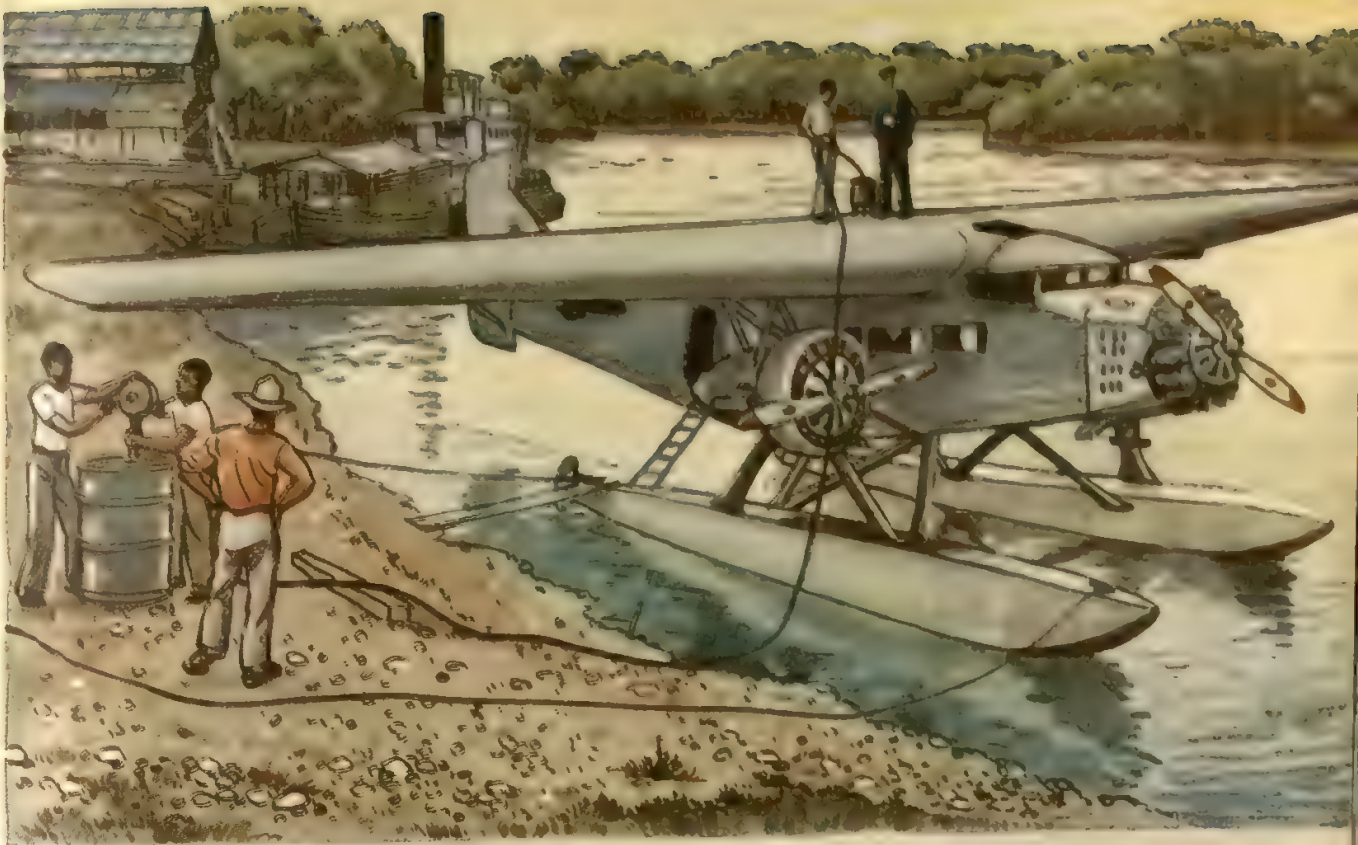


Figure 228. An airplane at a sleepy river village

Transportation by air is very useful in mountainous Colombia, but transportation by river steamer is still more important. Colombia's big export crop is coffee, and most of the coffee moves to the coast in boats on the Magdalena River. Coffee could not stand the high cost of air transportation.

Of course, Colombia has highways and railroads, too. But not one highway or railroad has been built from the highlands of Colombia to the Caribbean Sea. Since the Panamá Canal was built, some coffee has been shipped by rail to the Pacific port of Buenaventura, shown on the map on page 254. From Buenaventura it goes by ship through the Panamá Canal to Europe or the United States. Nearly all of Colombia's trade with the world depends on one river and one railroad.

A big problem. Transportation is one of Colombia's greatest problems. The mountains are high and steep. The lowlands are wide and swampy. In both the mountains

and the lowlands, it is hard to build roads or railroads. A new highway in the Andes joins Bogotá with Ecuador to the southwest and Venezuela to the northeast. But this highway does not go to either coast.

Even river transportation in Colombia is not very good. Yet a large amount of freight moves by river. The boat trip on the Magdalena River, between Barranquilla and the Andes highlands, may take anywhere from a few days to several weeks. Boats often get stuck on sand bars in the river. Then they must wait for high water before they can go on. The river is broken by falls and rapids. Freight must be loaded and unloaded several times. Fortunately, coffee keeps so well that it can stand this long and uncertain journey to the coast.

Mining in Colombia. The airplane in the picture is carrying gold. This is one kind of freight which is valuable enough to stand the expense of air transportation. The early

Spanish explorers of the region came partly because they had heard of gold and silver and precious stones in Colombia.

Gold is found in the midst of the coffee country. Most of it is mined by the simple method of washing in pans. In some of the valleys, big dredges scoop up gravel which has gold in it.

Colombia has long been famous for emeralds, but now the emerald mines are not much worked. Rich platinum mines are hidden away in the forests and mountains. Of all the underground wealth in Colombia, oil is the most valuable. Next to coffee it is Colombia's most important export.

Eastern lowlands. The map on page 254 shows that the coastal lowlands and the highlands make up only about half of Colombia. The other half is a vast and almost unknown lowland that stretches eastward from the Andes. Nowhere in these lowlands are there many people.

Parts of the eastern lowlands are covered with swamps and dense forests. In other places, there are vast grasslands with scattered herds of cattle. The high Andes Mountains shut off these lowlands from the heart of the country. Few settlers have moved up the Orinoco River as far as the eastern lowlands of Colombia.

Better days ahead. Today in Colombia only two acres of land out of every 100 acres are used for farming. A much larger part of the country will be farmed after there are many more good highways and more railroads. With the growth and spread of farming, there will be more trade, more manufacturing, more towns, and more large cities.

Venezuela

Neighbors. Colombia's neighbor on the northeast is Venezuela. One range of the Andes Mountains reaches from Colombia all the way across Venezuela to the coast east of Lake Maracaibo (Fig. 224).

Venezuela has two highland areas and two lowland areas, as shown on the map. The Caribbean lowland is a small area around Lake Maracaibo. The other lowland is a vast plain along the Orinoco River, southeast of the Andes highlands. The least known part of Venezuela is a highland region south of the Orinoco. As in Colombia, so in Venezuela, most of the people live in the central Andes highlands. This is the most important part of the country.

Maracaibo lowland. Until a few years ago almost all of the people in the Maracaibo lowland lived a very simple life. Some lived on goat ranches or cattle ranches, or on plantations. Others lived in sleepy Indian fishing villages along the shores of Lake Maracaibo. These people little dreamed of great riches hidden underground.

Then oil was discovered. Engineers and workmen came in and built hundreds of derricks like those in Figure 229. These derricks stand in Lake Maracaibo itself. Other derricks dot the land near-by. Today Maracaibo, once a fishing village, has become a city with theaters, big stores, hotels, and automobiles. And Venezuela is now the third largest producer of oil in the world.

Foreign companies own almost all the oil wells. But a share of the profits from the oil industry has been paid to the government of Venezuela.

The water is too shallow for large ocean ships to enter Lake Maracaibo. So most of the oil of the Maracaibo lowland is carried in small ships to refineries on the Dutch island of Curaçao, only a few miles away.

Farming around Lake Maracaibo. The lowland around Lake Maracaibo is not good for farming. Part of it is too dry and all of it is hot. This lowland is so near the equator that winter brings little relief from high temperatures.

Scattered over the lowland, there are many goat ranches and cattle ranches. In the southern part, there are a few plantations on which

cacao and sugar cane are grown. These plantations are near the Andes, where there is more rain and also water for irrigation. Most of the workers on both the ranches and plantations are either Negroes or Indians. For food, they raise corn, beans, manioc, or rice on little patches of land.

Highland heart. The Andes highlands are the heart of Venezuela. Here are most of the people, the capital city, and most of the farm lands.

On the map on page 254, Caracas, the capital of Venezuela, seems to be on the sea-coast. But it is not. Caracas is in the mountains about nine miles from the ocean. This city has the advantage of being near the coast, yet not in the hot lowland. It is far easier to get to the capital of Venezuela than to Bogotá, the capital of Colombia.

Roads and railroads lead in several directions from Caracas. One highway runs north through a mountain pass to La Guaira on the coast. The mountains are so steep that the highway winds and twists around for 21 miles in order to join the two cities, which are only nine miles apart by air.

In the picture on the next page, Caracas is seen in the distance, at the foot of a mountain. It is a city of many beautiful buildings, parks, and gardens. Of course, there are also thousands of plain and simple homes where the workers live. Many tourists in Caracas visit a house where Simon Bolívar once lived. Bolívar is known as the George Washington of South America. He was a leader in the South Americans' fight for freedom.

Farming in the highlands. Irrigated fields cover almost all the bottom of the valley in the picture in Figure 230. Men with oxen are plowing a field where sugar cane will be planted. The fields are irrigated from mountain streams. Some of the other crops in the highlands are corn, beans, rice, and cotton. All these crops are used within Venezuela. Factories in several busy cities in the highlands use the cotton for making cloth.



© Robert Yarnall Richie

Figure 229. Oil wells in Lake Maracaibo

The leading money crop of Venezuela is coffee. It is grown on steep mountain slopes in the tierra templada, just as in Colombia.

The coffee farmers of Venezuela have an advantage over those in Colombia. They are closer to the sea. Transportation to the coast is less expensive. But, in general, coffee from Venezuela brings less money per pound than Colombian coffee. In Venezuela, many of the coffee trees are not well cared for. In some places the good soil on steep slopes has been washed away. Many workers needed on the coffee plantations have better paying jobs in the oil fields of Lake Maracaibo.

Of course, not every mountain slope in Venezuela is covered with coffee trees. Food crops are grown in thousands of little patches. Much land is used for pasture. At higher levels, farmers raise crops that grow well in



Figure 230. A rich valley in the mountains near Caracas

cool weather, such as wheat, barley, and potatoes. In Venezuela, as everywhere, the elevation above the sea may make a great difference in ways of making a living.

New highways. The map on page 254 shows that Venezuela has a few short railroads. One important line connects Caracas with rich valleys to the west. In recent years, thousands of miles of highways have been built for every few miles of new railroad. One new highway leads south from the Andes highlands toward the Orinoco. Most of the money spent for highways came from the government's share of the profits of the oil industry.

Trucks and buses can climb steep slopes far more easily than trains can climb up them. This is of great importance to a country like Venezuela.

One of the many bus trips in Venezuela is the trip through the mountains from Caracas southwest to the border of Colombia. The trip takes about a week. Nearly all of it is through the Andes Mountains. Along the way a bus may pass hundreds of trucks and

automobiles. Beside the road, passengers see many people walking, many mules carrying sacks of coffee, and many oxen pulling carts. Not everyone can afford an automobile, a truck, or even a bus ride. And, of course, the new roads do not reach every village.

Along the Orinoco. The picture on the opposite page shows how people make a living on the wide plains along the Orinoco River. These plains are called llanos. The man who herds the cattle is the llanero.

The two rainfall maps on page 264 help explain some of the problems facing the llaneros. The maps show that the llanos get much more rain in summer than in winter.

In December and January, the grass gets more dry and brown, day after day. The llaneros must drive the cattle for miles to find enough feed and water. When summer comes, the rivers overflow and water covers much of the land. The cattle crowd together on land which is high enough to be out of the water.

When the floods disappear in autumn, the grass grows well. But there are millions of

mosquitoes in the mud holes that are left. Disease is a danger to both men and animals. Before long, the land is so dry that the cattle are again in great need of feed and water.

In spite of floods, drought, and year-round hot weather, thousands of cattle go to market from the llanos each year. Many of them are driven up into the cool highlands near Caracas. There they are fattened on good pastures before being killed for meat. The new highways help get the cattle to market.

Many more cattle could be raised on the llanos if the cattlemen would build fences, and dig wells, and get better kinds of cattle. Perhaps in years to come all these things will be done. If they are done, more people can make a living in the llanos.

City on the Orinoco. The port city for the llanos is Ciudad Bolívar. The map on page 254 shows that this city is more than a hundred miles up the Orinoco River. This is as far up river as ocean steamers can go.

Many kinds of transportation meet at Ciudad Bolívar. In the dry season, automobiles and even buses can come across the dusty llanos from the central highlands. Llaneros on horseback ride in from the plains. Airplanes regularly bring passengers who may have been in Caracas only a couple of hours before. At the water front, there are ocean

steamers, hundreds of river boats, and many canoes. Small river boats sail many miles upstream from Ciudad Bolívar.

The goods which are loaded on ocean steamers at Ciudad Bolívar tell much about the llanos. Cattle hides are a large part of the outgoing freight. Some cattle hides are brought there from as far away as eastern Colombia. It is easier to bring them down river than to haul them over the Andes. Even rubber comes from dense forests far upstream where the plains of the Orinoco join the lands of the Amazon.

Guiana Highlands of Venezuela. Wagon trails lead south from Ciudad Bolívar into the edge of a vast mountainous region known as the Guiana Highlands of Venezuela. The map on page 254 shows that this region is about half of Venezuela. Except for a few Indians, almost no one lives there. It is a little used and little known land.

Years ago explorers found gold and diamonds in these highlands. One gold mine there was once considered the richest in the world. But it took weeks for the gold to reach Ciudad Bolívar. Today, there is a regular airplane service to the mining towns, and much of the gold is carried away by plane. Still the land is so hot, and so rough, and so far from good transportation by land or

[263]

Figure 231. In the midst of the llanos



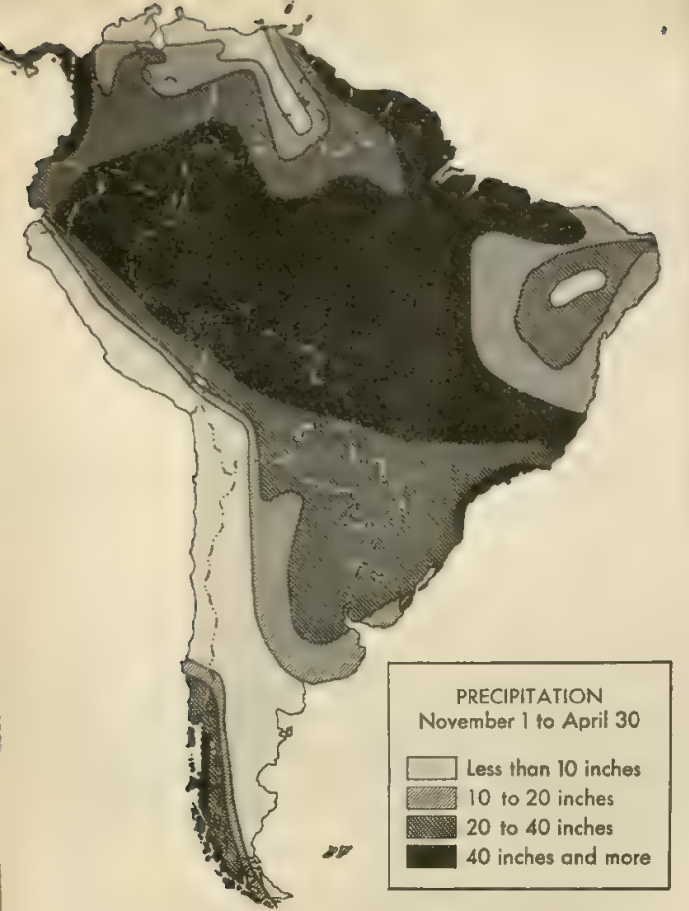


Figure 232.

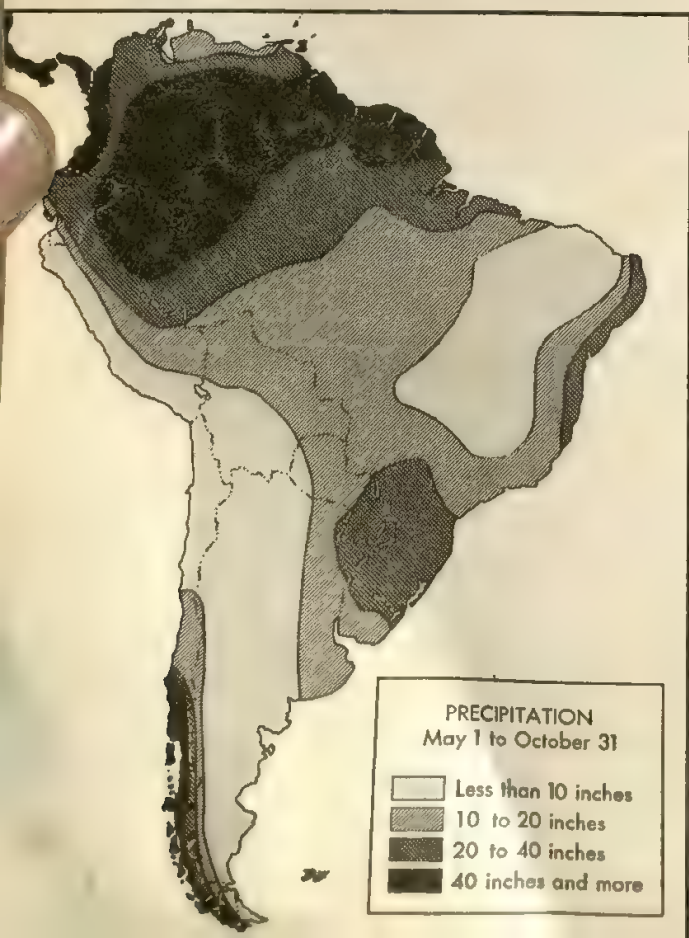


Figure 233.

water, that it will be a long time before the Indians see many people other than miners.

British, Dutch, and French Guiana

Three colonies. European countries still own three little colonies in South America. They are called the Guianas. As the map on page 254 shows, one colony is British Guiana, one is Surinam, or Dutch Guiana, and the third is French Guiana. These colonies are like islands. No land routes of travel reach them.

The three Guianas are alike in having a narrow lowland along the coast and forest-covered highlands in the interior. The picture on the opposite page shows part of a small village in the forest in Surinam. The people who live in this place have little to do with the outside world. The forest provides them with materials for their homes and with some of their food. A banana tree can be seen beyond the house near which the child is standing.

Not many white people live in the Guianas. A long time ago the owners of Guiana plantations brought laborers from many parts of the world. They came from places as far apart as China and India and Africa. Many Negro slaves ran away into the forests. Today, there are Negro villages back in the mountains, side by side with Indian villages.

A living in the Guianas. Along the hot and swampy coasts, men work on sugar and rice plantations. Some men cut valuable timber in the forests and float it down the swift rivers. Other men mine bauxite ore, from which aluminum is made. But the Guianas remain, to most of the world, poor and forgotten lands.

Things to Remember About Colombia— Venezuela—The Guianas

1. *Most of Colombia's wealth is in the highlands, although most of the country is lowland.*



Figure 234. In a hot and rainy forest

© Hardenbrook, from *Three Lions*

Explain "Even to the coastal cities, the highlands of Colombia are more important than the lowlands." How does the sale of coffee help manufacturing?

2. *Transportation is a great problem in Colombia—Venezuela—the Guianas.* Tell about travel difficulties on the Magdalena River. Are airplanes used much to transport coffee? Why, or why not?

3. *"Venezuela is now the third largest producer of oil in the world."* Describe life in the Maracaibo lowland before and after oil was discovered. What difference did this discovery make to people elsewhere in the country?

4. *Most people in Venezuela live in the mountains.* Explain why "the elevation above the sea may make a great difference in ways of making a living."

5. *The llanos may support many more people in the future.* Name three things that might

help the cattlemen. Explain the problem of rainfall on the llanos.

6. *The Guianas are like islands.* Why?

Exploring and Finding for Ourselves

1. As a continent, South America faces more toward which ocean, the Atlantic or the Pacific (p. 5)? How does the map show this?

2. Which of three mountain areas in South America is the highest? How can you tell?

3. Compare the map of South America with the map of North America (Fig. 183). Which continent has most of its land in the tropics? Which continent has most land in "middle latitudes," that is, between 30° and 60° ? Why are these differences important?

4. Why is Barranquilla a center of trade?

5. What does the map show about railroads in the Guianas? What does this suggest about trade?



Figure 235. A high valley in the Middle Andes

Figure 236. A costly mountain highway, connecting highlands and lowlands



Ecuador—Peru—Bolivia

In the Middle Andes. From Colombia, the Andes Mountains extend southward for about 3800 miles, to the southern tip of South America (Fig. 224). In most places these mountains are near the west coast. The part of the Andes in Ecuador, Peru, and Bolivia is called the Middle Andes.

The picture at the top of the opposite page shows an Indian farm village in the Middle Andes. This village is much like many other farm villages in the mountains of Ecuador, Peru, and Bolivia. In each of these countries there are lowlands, as well as highlands. The picture at the bottom of the page shows a road between the highlands and lowlands.

The Indian farm village is in the mountains of Ecuador. Two farmers with their llamas are on their way to their homes in the village. The llamas are loaded with bundles of grain. The fields where the farmers work are in the valley beyond the village.

Land of the Incas. The Indian farm villages in Ecuador, Peru, and Bolivia have changed little in hundreds of years. When the Spaniards first came they found an Indian empire in the Middle Andes. The king was called an Inca. Today all the people of that empire of long ago are called Incas.

Most of the Incas were farmers who raised such crops as potatoes, corn, and a grain called quinoa. Many fields were irrigated from mountain streams. Almost all farm work was done by hand. Llamas were used as pack animals. The Incas depended on themselves for everything. They knew nothing about the rest of the world.

Most of the people who now live in these highlands are descendants of the Incas. Even today many speak the old Indian languages instead of Spanish.

The Spaniards brought new crops, such as wheat and alfalfa, and new kinds of livestock, such as oxen and sheep. But many of the old ways of farming are used today. It is not surprising, then, that the Middle Andes are often called the "Land of the Incas."

Land of few roads or railroads. An automobile road leads to the farm village in the picture. But there are thousands of other villages in the Middle Andes to which no highway leads. Transportation is a big problem in these mountains.

The highway in Figure 236 was built at great cost between the highlands and lowlands of Bolivia. In such places the cost of building railroads is also very great. The map on page 254 shows that few railroads cross the Andes.

Highland people and lowland people. Partly because travel is hard between the highlands and the lowlands, the Indian people of the highlands have little to do with the people of the lowlands. Many of the people in the lowlands are whites or mestizos. Some of these people are much interested in distant lands, for they raise crops for export. Most of the highland people pay little attention to the rest of the world. Slowly, highways and air lines are helping to bring the highland people and the lowland people together.

Ecuador

Country of the equator. The name of this country suggests where it is, for Ecuador is the Spanish word for equator. Figure 224 shows that Quito, the capital, is almost exactly at the equator. Of course, the equator is 0° latitude. In Ecuador, in the midst of the tropics, travelers might expect to find forests and swamps and hot weather everywhere.

But the real Ecuador is a country of cool highlands, with a border of hot lowlands on each side.

In Quito, the weather is chilly on most days of the year. This is to be expected, since Quito is high in the mountains. The city is more than 9000 feet above sea level.

Throughout the year in Quito, each day and each night is almost exactly 12 hours long. There is no change of season from warm to cool or cool to warm. The noon sun is never far from overhead. These things suggest the city's location at the equator.

Highland farmers. About three-fourths of the people in Ecuador live in the highlands. Some of the highland people live in Quito and in the few other cities. But most of them are farmers. Their simple homes look much like those in Figure 235.

Crops grow well in the rich volcanic soils, but farm life is difficult. The fields are small and the farmers cannot afford modern machines that would save much work. Few of the highland farmers ever go away from home. Their simple farm life is the only way of living that they know much about.

Lowlands, east and west. East of the Andes, in Ecuador,*there is a little known lowland, almost covered with dense forest. Explorers have found that a few Indians live in this forest. These Indians make a living from hunting and fishing and cultivating little garden patches in forest clearings.

The Pacific lowlands of Ecuador look much like the forested eastern lowlands. The maps on page 264 show that in both lowlands the rainfall is heavy. Yet, partly because of better location, many more people live in the Pacific lowlands. Most of them are white or mestizo or Negro.

Guayaquil and trade. The main entrance to Ecuador is through the port of Guayaquil. This is a river city about 40 miles from the ocean. Most of the people of Guayaquil make a living from trade. It is the largest city in the country.

Years ago Ecuador led all the world in the production of cacao. The greater part of it was grown on plantations near Guayaquil. The hot, wet climate and fertile soils there are well suited to cacao.

Ecuador no longer leads the world in producing cacao. Diseases have attacked the cacao trees. Then, too, many plantations produce less than they did because they are managed carelessly. However, cacao still is Ecuador's leading farm export. Other crops grown in the lowlands include coffee, corn, bananas, and rice.

The lowland forests help make Guayaquil a city of trade. They furnish lumber, rubber, tagua, and leaves for making hats. Tagua is the nut of a kind of palm tree. When ripe, the nut is hard and white, and looks like ivory. It often is called vegetable ivory. Tagua nuts are used in making buttons.

Fine straw hats called Panamá hats are made in Ecuador, though the name does not suggest it. The straw is the leaf of another kind of palm tree. Most of the hats are woven in homes or in little workshops. Ecuador has few factories of any kind.

In exchange for goods from overseas, Ecuador sells many products. Some of these products, such as oil and gold and silver, come from underground. But a large part of the country's exports comes from the farms and forests of the Pacific lowlands. At Guayaquil, Ecuador's city of trade, there are few reminders of the highlands.

Between lowlands and highlands. In Ecuador both the rugged mountains and the wet lowlands have held back travel. Figure 224 shows a railroad from Guayaquil to Quito. There is no other important route of land travel between the lowlands and the highlands. A section of the Pan American Highway leads from Quito northward into the highlands of Colombia, but it does not help to tie the highlands and lowlands together.

Old ways of carrying freight still are used. Pack trains of llamas and mules find their



Figure 237. Rich farms in the desert

United States Department of Agriculture

way up steep slopes and along the edges of deep canyons. In some places mule trains use the railroad between Guayaquil and Quito as a trail.

In divided Ecuador the people of the highlands live largely to themselves, while the people of the Pacific lowlands live by trade. If Ecuador is to become a united country, it must have, among other things, better transportation between lowlands and highlands.

Peru

Another divided country. Three groups of people help to tell the story of Peru. One group lives in Lima, Callao, and other places along the coast. The picture above shows part of a plantation in this part of Peru.

Indian farmers in the high Andes make up the second group. In their midst is the city of Cuzco (Fig. 224).

The third group lives beyond the Andes, in the eastern lowlands. In that part of the country, the leading city is Iquitos.

Each city, Lima, Cuzco, Iquitos, stands for a separate group of people. And each group is almost cut off from the others by high mountains.

Dry coast. Travelers by air notice great differences along the Pacific coast of South America. Flying south they see green forests in the lowlands of Colombia and Ecuador. Then, almost at the border of Peru, the color changes. From there to central Chile, the Pacific coast is a gray-brown desert. Yet this desert land is one of the most important regions of Peru.

The desert coast of Peru is dry partly because of a cool ocean current. This current flows northward along the coast from central Chile to about the southern border of Ecuador. Along this coast, the winds gener-

ally blow from the sea to the land. Since the land is warmer than the sea, the moisture in the air does not condense and fall as rain.

Wealth in a dry land. The coastal desert of Peru was little used in the days of the Incas. Since then, men have made use of several important resources in this dry land. Water is the greatest of them.

More than 50 small rivers flow from the Andes across the desert to the sea. Today there are dozens of irrigated oases along these rivers. In nearly all the oases, cotton and sugar cane are grown on large plantations. The tall crop in Figure 237 is sugar cane. In the foreground is a gate which controls water for irrigation.

A flock of sheep is moving along the edge of the irrigation ditch. This is not a common sight, for only a few sheep are raised in the desert lowlands. The irrigated land is too expensive, and the desert pasture is very poor.

The climate along the coast of Peru is so warm that cotton and sugar cane need not be replanted each year. Irrigation and a year-long growing season make it possible to plant the crops so they will ripen at various times. This spreads the heavy harvest work over many months. It also permits better use of machines and labor. Some of the world's best cotton grows along the coast of Peru. It brings high prices in world markets.

A plantation owner uses modern machinery, but he must also have hundreds of workers. They live in simple adobe houses, well suited to the desert climate. They grow much of their own food, including rice, corn, and vegetables. With the help of irrigation and the warm climate, two or three of these food crops can be grown in one year.

Oil. Another important resource along the desert coast of Peru is oil. The oil wells are in the northwestern corner of the country, at or near the coast. Most of the food comes by boat. Water is piped from miles away. But the oil fields have a great advantage in being almost at the edge of the ocean. Oil

moves directly and cheaply in ocean ships from oil field to refineries.

Guano. Countless small fish live in the cool ocean current offshore. Vast numbers of birds live on these fish and roost along the coast. Guano is bird manure, which makes excellent fertilizer. Years ago many thousands of tons of guano were sold in distant countries. Now much of it is used on the cotton and sugar plantations in Peru. Guano, too, is one of the resources of this desert land.

Lima. The heart of Peru is in the desert lowland. The desert has oil and guano and water for irrigation. It also has the largest two cities in the country, Lima and Callao. In Lima, the capital, more than half a million people live.

In many ways Lima looks like an old Spanish city. Government buildings and a church face a large plaza in the center of the city. In the plaza and in other parts of the city there are many trees and flowers. But Lima is also a modern city, with factories, office buildings, and new apartment houses. Some factories make cloth from cotton grown in the oases.

Lima itself is in an oasis. One of the largest rivers of the coastal desert flows right through the city. This was one reason why the Spaniards chose this place for their capital. They needed water for the city and for irrigation. They also wanted a location near the coast. They found both where they built Lima.

Callao, city of trade. The port for Lima is Callao. Most of the people of this city depend for a living on trade. Some load sugar and cotton and copper into ocean ships, or unload machinery, cloth, lumber, and other things which are brought in exchange. Others work in banks, stores, or warehouses.

Peru's trade with Europe and eastern United States was helped greatly by the building of the Panamá Canal. The large globe on page 4 suggests why.

Farming in the Andes. The city of Cuzco, shown on the map on page 254, is in a moun-



Figure 238. New ways of travel, old ways of farming

tain farming region. Cuzco was the capital of the empire of the Incas. Now it is just another Indian city. In the valleys around the city, life has changed little in many years.

The farm village in the picture is near Cuzco. It is threshing time. On the big threshing floor the oxen tramp the grain from the straw. Then men toss the grain into the air so the wind will blow the chaff away. The farmers use more of the grain than they sell. In such places most farming is for food, and not for money.

There are hundreds of farm animals in a village of this size. The donkeys are pack animals, used to carry grain from the threshing floor or fuel from the mountain slopes. Many farmers also use llamas, like those in Figure 235, as pack animals. Oxen pull plows and harrows and help with threshing.

Of course, much of the farm work in the mountain valleys is done by hand. One of the hardest kinds of work is cutting the grain with hand sickles. Many of the fields are too

small for machines, and anyway most of the farmers are too poor to buy them.

The farmers in the picture grow crops that suit the cool, mountain climate of the high Andes. These crops include wheat, barley, quinoa, and potatoes. Many fields are irrigated in a simple way with water taken from mountain streams.

The mountain people wear heavy woolen clothing, much of it homemade. The houses, the furniture, and many of the farm tools were made by the farmers themselves. Market day in the village is a time for visiting as well as for trading. There is little trade with the outside world.

An automobile is passing the village in the picture. So far, the coming of the highway has brought few changes. But the automobile suggests that the ways of the Incas may change at last.

Mines in the Andes. Long ago the Spaniards came to the Middle Andes largely because of the mineral riches there. For many

years, gold and silver were of greatest importance. Today, copper leads all mineral products. Next to farm products, copper is the chief export of Peru.

The picture shows a copper smelter near Cerro de Pasco, a famous mining city in the mountains of Peru (Fig. 224). The railroad station at Cerro de Pasco is said to be the highest in the world. It is more than 14,000 feet above sea level.

Mining faces great problems in the Andes. Work at high altitudes is dangerous to health. Fuel is scarce. Much of the mining region is too cold for crops to grow. In order to get food for its thousands of workers, one mining company has bought nearly a million acres of land where sheep and cattle are pastured.

Transportation is another serious problem. Figure 224 shows the railroad which brings copper to Callao from Cerro de Pasco. It was built at great cost, through very high mountains. Trains pass through more than 60 tunnels on the route. Yet so great are the mineral resources in the Middle Andes that mining continues there in spite of all difficulties.

High pastures. In the Middle Andes men herd flocks on pasture lands higher than most of the farm villages. The picture on page 273 shows part of a sheep ranch in the high pastures of Peru. It is too cold there for most crops, but grass grows well. Probably the highest dwelling in the world is a shepherd's hut in Peru at about 17,000 feet above sea level.

In the high pastures, sheep and alpaca outnumber all other livestock. The alpaca is related to the llama, but it is smaller and is not often used as a pack animal. The alpaca is raised for its fine wool.

Each year many tons of wool from sheep and alpaca are shipped from small ports on the coast of southern Peru. The map on page 254 shows the railroads which carry much of this wool from the mountains to the coast. Fine wool is valuable enough to be taken to the coast even though the cost is high.

Iquitos and the frontier. The city of Iquitos, east of the Andes, is in a land very different from the desert coast or the high Andes. The map on page 254 shows that Iquitos is in the northern part of the vast

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Figure 239. A giant copper smelter, in the high, cold Andes

Pan American Union





Figure 240. On a sheep ranch high in the Andes

C Ewing Galloway

eastern lowlands. It is a port on the Amazon River.

All around Iquitos there are dense forests and hundreds of branching streams. On the streams boats bring tropical forest products and farm products to Iquitos, the business center of the upper Amazon.

Some people in Peru believe that farmers could make a good living in the eastern lowlands. The government has tried to get families to move there, but few have gone.

Recently a highway was built across the Andes to a branch of the Amazon. Airplanes fly regularly to Iquitos. New highways and airplanes seem to mean that little by little the different parts of Peru are being drawn together into a united country.

Bolivia

Inland country. Bolivia is a country without a seacoast. The map on page 254 shows that Peru and Chile shut off Bolivia from the

Pacific Ocean. Other countries shut it off from the Atlantic Ocean.

The eastern lowlands are the larger part of Bolivia. As in Peru and Ecuador, these lowlands have few people. Most of the people in Bolivia live in the mountains. Some live where it is high and cold. Others live in a warmer land of forest-covered mountain slopes. Bolivia, too, is a divided country.

Tin, the leading export. Ever since the Spaniards came, Bolivia has been known for its mines. For a time gold and silver were most important, as they were in Peru. In recent years, tin has been first. No other export from Bolivia is now worth nearly so much.

The miners of Bolivia live far up in the high Andes. Most of the tin mines are from 13,000 to 15,000 feet above sea level. Of course, fuel and water and foods are scarce. It is hard to get workers who can stand hard work in the cold, thin air.

Four railroad routes which lead from Bolivia toward the sea are shown on page 254.



Figure 241. La Paz, the highest capital in the world

© Fenno Jacobs, from *Three Lions*

Two lead to the coast in Chile. One leads to Argentina. One leads to Lake Titicaca, where steamships carry freight across to Peru and a railroad connection with the coast. Freight rates are high on all four routes.

La Paz. About half the people of Bolivia live on a high plateau between two ranges of the Andes. Some of them live in La Paz, the capital, shown in the picture. La Paz is about 12,000 feet above sea level. It is the highest capital city in the world.

The Spaniards built the city in a canyon to avoid the cold winds of the plateau. In the picture, the bare high slopes beyond the city are one side of the canyon. The top of the canyon wall is the edge of the plateau.

The picture shows clearly the influence of the people who came from old Spain. The balconies, tile roofs, and old churches are like those in Spain. Most government people and business people in La Paz are of Spanish

descent. The modern buildings in the picture show the influence of new ways of building in countries besides Spain.

Many of the Indians in and near La Paz live in small stone houses much like simple houses in Spain. Other Indians live in adobe houses like those of their Indian ancestors.

Farmers on the high plateau. Many Indian farmers live on the high plateau, outside of La Paz. Some of them live along the shore of Lake Titicaca. Figure 242 shows several of these lake-shore farmers. Their boat is called a balsa. The farmers made it from reeds which grow at the edge of the lake. People often use such boats for trips along the shore.

Farming is difficult on this cold plateau. The farmers cultivate little patches of grain or potatoes on slopes like those in the background of the picture. There, almost no trees can grow. Fuel is scarce, and nights are always cold. Many of the potatoes are made

into chuño, so that they will keep for years. In making chuño, potatoes are frozen and squeezed again and again, and then dried. In the higher and colder parts of the plateau, shepherds herd llamas, alpacas, and sheep.

To the north and east. Nearly half the people of Bolivia live on the rainy eastern slopes of the Andes. This land is called the Yungas. Much of it is covered by forests. In the Yungas there are more mestizos and whites than on the high plateau.

The climate of the Yungas is warm. The soils are rich. Corn and cotton and coffee grow well. But transportation up the mountains to market is difficult. Figure 236 shows a road between the Yungas and the plateau. With better transportation the Yungas might well become the main part of Bolivia. Already there is an air route between the Yungas and the high plateau.

Coca leaves and liquor made from corn are two important products of the Yungas. These two products are worth enough to stand the high cost of the trip to market on the plateau. Most of the highland Indians chew the leaves of the coca shrub. The leaves contain a drug which makes people numb to cold and hunger and fatigue.

In recent years, oil has been discovered in the eastern lowlands of Bolivia. Full use of the oil fields must wait for better transportation. In Bolivia there are many resources, both underground and on the surface, that are not used. One reason is because it is so difficult to get from one part of the country to another.

Things to Remember about Ecuador—Peru—Bolivia

1. *"The Indian farm villages in Ecuador, Peru, and Bolivia have changed little in hundreds of years."* Tell about the Incas—who they were, where they lived, and how they made a living. Why are the Middle Andes now called the "Land of the Incas"?

2. *Ecuador, Peru, and Bolivia are divided*



Courtesy Grace Line

Figure 242. To a lakeside market by boat

countries. For each country name one difference between highlands and lowlands. Give reasons for the difference.

3. *"Three groups of people help to tell the story of Peru."* Where does each group live? With the help of pictures, tell about irrigation farming and mining.

4. *The full use of resources in Bolivia must wait for better transportation. Use the map and one picture to explain this.*

Exploring and Finding for Ourselves

1. Find the equator on the map (Fig. 224). Follow it all across South America. At what places along the equator would you expect to find cool weather? Warm weather? Why? Where, along the equator, do most people live (Fig. 204)? Give reasons.

2. What do the maps on page 264 tell about the coast of Ecuador? The coast of Peru?

3. Tell the meaning of the following words: cacao, volcanic soils, tagua, quinoa, guano, Yungas, coca leaves, balsa.



Figure 243. Open pit copper mine at Chuquicamata

CIAA Photo

Chile

A narrow ribbon of land. The shape of Chile is unlike that of any other country. Chile stretches along the west coast of South America for about 2500 miles (Fig. 224). Yet its greatest width is only a little more than 200 miles.

North and south of the equator. In some ways Chile reminds us of part of the western coast of North America. The northern third of Chile is a dry land, like northwestern Mexico, which is about the same distance from the equator. Of course, Mexico is north of the equator, and Chile is south of it.

Middle Chile is somewhat like California, Oregon, and Washington. The forest-covered coast of southern Chile looks like the west coast of Canada and southern Alaska. Cape Horn, at the southern tip of Chile, is about as far south of the equator as Juneau, Alaska, is north of it.

Most of the people live in Middle Chile, between the desert to the north and the forests to the south. Yet almost all of the exports come from the desert.

Desert North. The northern third of Chile is one of the driest lands in the world. At

some points, years go by without a drop of rain. As in Peru, winds often blow from the cool ocean to the warmer land. As the winds are warmed over the land, they can hold more moisture. They are, then, drying winds. They help to make northern Chile a desert.

For many years, few people lived in dry northern Chile. Now thousands of people make a living from the mineral resources of the desert. The Desert North has become a very important part of the country.

Copper mines. The picture shows work going on in an open pit copper mine. This huge copper mine in the Chilean desert is at Chuquicamata (Fig. 224). In this mine, blasts of dynamite loosen tons of ore at a time. Then big machines load the ore into railroad cars. It is a great advantage that a vast amount of ore is at or near the surface.

In some ways it is hard to carry on mining in the desert. All the workers, food, water, machines, fuel, and many other things must be brought from distant places. It is like moving a whole city into the desert, and then, day after day, bringing in all the supplies that are needed.

Chile has several important copper mines. One of them is in Middle Chile, south of the desert. But the mine at Chuquicamata is the largest of all. It is believed that there is a greater supply of copper ore at Chuquicamata than at any other one place in the world. In recent years, copper has headed the list of things which Chile sells to other countries.

Nitrate. The mineral called nitrate is used chiefly as a fertilizer and for making ammunition. Rock that contains nitrate is found in hundreds of scattered places in northern Chile. The deposits are at or near the surface of the ground. They can be there only because northern Chile is a very dry desert. If much rain fell, the nitrate would be lost, for it dissolves easily in water.

Chile has the only large deposits of nitrate-bearing rock in the world. For many years, nitrate was by far the most important export

of the country. Another leading export was iodine, also obtained from nitrate-bearing rock. Then men in other countries invented ways of making nitrate in factories, using nitrogen taken from the air. Less Chilean nitrate was needed. Now nitrate is second to copper in the list of Chile's exports. And now some of the nitrate camps in the northern desert are lonely ghost towns.

Depending on mines. In Chile, mining is important to many people besides those who live in the mining camps. The people who live in the port cities along the northern coast make most of their living from the mining business. Ore must be shipped out and supplies shipped in. There are small iron and coal mines in Chile, too. But copper and nitrate provide almost all of the country's exports.

Middle Chile. Most of the people of Chile live in the middle section, between about 30° S. latitude and Puerto Montt (Fig. 224). Santiago, the capital, is in Middle Chile. The Desert North and the lands south of Puerto Montt are so far away that to some people in Middle Chile they seem like distant possessions of the country.

In Middle Chile, most of the people live in a Central Valley, between the Andes and a range of hills along the coast. The northern part of the Central Valley is known as the "California of Chile." Winters there are mild and rainy. Summers are dry.

Estancias. The picture in Figure 244 shows part of a large farm called an estancia. It is near Santiago. The orchards and fields on this farm are irrigated from streams which rise in the Andes seen in the distance.

An estancia in Chile looks almost like a little village. The owner's house is large and surrounded by trees and gardens. Not far away are barns and corrals and granaries. Hundreds of workers live in simple brick houses near-by. They raise most of their own food in little gardens. Few workers ever move from the estancia where they were born.



Figure 244. In the "California of Chile"

Courtesy Pan American Airways

Grain, cattle, and fruit. The leading products of the estancias in the "California of Chile" are grain, cattle, and fruit, in that order. Wheat is the chief grain.

Wheat is sowed at about the time of the first winter rains. It is harvested in December or January, both dry summer months. The weather then is good for harvesting and threshing wheat. There is little danger that rain will spoil the crop, either before it is cut or afterward. Some estancia owners have tractors and threshing machines, but most grain is threshed with the help of oxen on old-fashioned threshing floors.

Cattle graze in irrigated alfalfa fields in the summer time, or men herd them on high mountain slopes. In winter, there is pasture for large numbers of cattle on the lower mountain slopes.

Many kinds of fruit are grown, such as grapes, lemons, oranges, and plums. Summer is the season, of course, for picking and marketing the fruits. If Chile were nearer

the great markets of eastern United States and western Europe, many more acres probably would be planted to fruit. Even as it is, some fruit is grown on nearly every estancia.

Farther south in Middle Chile. The southern part of the Central Valley is in some ways like western Oregon and Washington. It is a land of year-round rain. In this part of Chile there are lumber mills, farms in forest clearings, and year-round pastures. The farmers raise such crops as oats and potatoes.

Indians held the southern part of the Central Valley for many years after white people settled farther north. It was in recent times that pioneers moved in, cut down some of the timber, and built homes and villages. Today, small groups of Indians remain. But most of the people here and in all Chile are mestizo or white.

Santiago. The capital of Chile, Santiago, is a large and beautiful city. It is near the northern end of the Central Valley. Visitors



Figure 245. Valparaíso, chief seaport of Chile

© Charles Perry Weimer, from Three Lions

in Santiago admire the boulevards, fine homes, and government buildings, and the view of the snow-covered Andes.

Santiago is more than a beautiful capital city. It is also the most important business and railroad center in the country.

In Chile more people make a living from trade and industry than from farming. In recent years, many new factories have been built, partly because mountain streams have been used in making electricity.

Valparaíso, the great port of Chile. In part because of the shape of the country, Chile has many ports (Fig. 224). Valparaíso, the largest port, is shown in the picture. Ships, both large and small, sail in and out of its harbor, and back and forth along the coast.

The picture shows part of the curving shore line of the bay at Valparaíso. The business district is on nearly level land along the water front. Most of the homes are built on steep slopes. In some places, people ride

up the hills on elevators instead of using sidewalks.

Valparaíso has the best harbor in Chile and handles a large part of the country's trade. The railroad tracks along the water front in the picture show that trains meet ships at Valparaíso. The city has good railroad connections with Santiago, and the densely settled northern part of the Central Valley (Fig. 224). Between Santiago and Puerto Montt, travelers may ride on modern streamlined trains. But the ocean carries most of Chile's freight, and probably will continue to do so.

To Valparaíso come the shipments of sugar, cotton cloth, machinery, and other things which Chile must import. The farm lands and weather in Chile are better suited to raising food crops than to raising cotton. Partly for that reason, the farmers of Chile raise and sell food crops and buy cotton.

Cool and rainy South. The southern third of Chile has fewer people and produces less



© Three Lions

Figure 246. In southern Chile, a land of many sheep

wealth by far than either the Desert North or Middle Chile. Most of the land between Puerto Montt and Cape Horn is mountainous and covered with dense forest. This is a stormy land, windy and rainy in every season of the year.

Though there is much forest land in southern Chile, there is little lumbering. Chile has other forests nearer to places where lumber is needed. Then, too, lumbering is difficult in a land of steep mountains, poor transportation, and almost continuous rain.

Sheep in southern Chile. Near Punta Arenas (Fig. 224) there are many open grasslands where thousands of sheep are raised. In one way or another, most of the people in that part of the country make a living from sheep.

Figure 246 shows part of a sheep ranch in southern Chile. The sheep herder in the picture wears a heavy robe, called a poncho, to protect himself from wind and rain. Each spring, in October and November, hundreds

of extra workers arrive in Punta Arenas to help shear the sheep.

Punta Arenas is the largest city in southern Chile, and the southernmost city in the world. Before the Panamá Canal was built, many steamships stopped at Punta Arenas for coal, which was mined near-by. Today, shipments of mutton and wool are of greater importance than coal to Punta Arenas.

Few products could stand the cost of the long trip from Punta Arenas to northern markets. The distance by boat from Punta Arenas to New York is more than twice the distance from New York to London.

Things to Remember about Chile

1. *Because of resources of copper and nitrate, the Desert North is an important part of Chile.* What has weather to do with one of these resources? Why are some mining towns now ghost towns? How do these mineral resources help people other than miners? Tell about problems of mining in the desert.

2. *Middle Chile has most of the people, the farms, the factories, and the cities in the country.* What are two advantages for farming in Middle Chile? How do most people in Chile make a living? Why are the mountains important to factories? To farmers?

3. *Part of the Central Valley, in Middle Chile, is known as the California of Chile.* Why? Use maps on page 264 to explain "California weather" in Chile. Give one reason why more fruit is grown in California than in Chile.

4. *Most people in southern Chile make a living from sheep. Though there is much forest land, there is little lumbering.* Tell about the sheep ranching. Why is there little lumbering?

5. *The ocean carries most of Chile's freight.* Use the map to show why. Give two reasons why Valparaíso is the leading port.

Exploring and Finding for Ourselves

1. Find Punta Arenas on the map. How did the building of the Panamá Canal affect it?

2. Find Chuquicamata on the map. Show on Figure 3 the route copper ore would likely follow if shipped from there to New York City.



Figure 247. Buenos Aires, national capital and national gateway

Courtesy Pan American Airways

Argentina

In southern South America. Argentina is a land of many different lands. Some parts of northern Argentina are nearer the equator than are Florida or Texas. The southern tip of Argentina is farther from the equator than is the northern boundary of the United States (Figs. 224 and 183).

In both Argentina and the United States most people live in cities. Both countries have millions of acres of rich, almost level farm land. Yet in many ways the two coun-

tries are different. The supply of minerals in Argentina is very small. In Argentina, more of the people depend for their living on trade with countries overseas.

Buenos Aires. The picture above tells much about Buenos Aires, the capital of Argentina (Fig. 224). Buenos Aires is a *port* city. Ocean ships load and unload freight at the wharves in the picture. River boats sail back and forth between Buenos Aires, on the Rio de la Plata, and ports on the Paraná



Figure 248. The Pampa and its surroundings

and Uruguay rivers (Fig. 224). The large buildings beyond the park in the picture are in the main business district.

Buenos Aires is a *big* city. It is the largest city south of the equator, on any continent. It has a population of about two and a half million people. In the picture the buildings stretch away almost to the horizon. Many people ride long distances on streetcars or in subways in getting to and from work.

Buenos Aires is a city of *government*. The home of the President of Argentina is at the left edge of the picture, just beyond the big circle in the park. The Argentine Congress meets in the Capitol, not shown in the picture.

Much more needs to be said in describing Buenos Aires. It is a *factory* and *meat-packing* city. Buenos Aires is the center of the country's *banking*. It is also the greatest *educational* and *social* center of the country. Quite as important as anything else, Buenos Aires is a great *railroad* city.

Of course, Buenos Aires has not grown to be the city that it is because of resources within the city limits. It has grown mostly because it is a great meeting place, a center of trade and travel by land and sea. The ways in which people make a living in Buenos

Aires depend much upon what people do in other parts of Argentina, and even in some distant lands.

In the Pampa. The Pampa has most of the people in the country and its most valuable resources. The word "pampa" means a plain. The Pampa in Argentina is a vast, fertile, treeless plain. The map in Figure 248 shows that it extends inland from Buenos Aires and south along the coast. Without the products of the Pampa, Buenos Aires would be a much smaller city.

The pictures on pages 283, 284, and 285 show three places in the Pampa. At many other places within the Pampa pictures could be taken which would look like these three. Nearly everywhere the fields are big and the land is level. In most places the horizon is broken only by piles of straw and by clumps of trees around homes that are far apart. The pictures show wheat and corn and cattle. These are the leading products of the Pampa.

Estancias and tenants. There are many small farms in the Pampa, but most of the land is in large *estancias*. Each covers many acres. All of the land seen in any of the three pictures might belong to one *estancia*. Many *estancias* belong to wealthy families who spend much of their time in their city homes. They hire managers to care for their land.

On many *estancias* the fields are divided among tenant farmers who pay for the right to use the land. Most tenants live in small adobe houses, simply and cheaply made. Since tenants move often, they spend little time or money improving their homes.

Most farms and *estancias* in the Pampa have no granaries or sheds or barns. Harvested crops, livestock, and farm machinery are left out in the open, winter and summer. The little adobe house of the tenant farmer, standing by itself, looks drab and lonely in the wide Pampa.

Large numbers of tenant farmers have come to the Pampa from Europe in recent years, many of them from Spain or Italy.



Figure 249. Harvesting wheat on a big scale

Department of Agriculture, Argentina

Nearly all the people in the cities, as well as those on the farms, are of European ancestry. There are few Indians or Negroes in Argentina.

Seasons and weather. South of the equator, the seasons are, of course, the opposite of seasons in the United States. Spring months in the Pampa are September, October, and November. The Argentine people celebrate Christmas in mid-summer.

Summers in the Pampa are hot and rainy, although in some parts of it there is danger of drought. Another danger in summer is the locust. Many times in the past great swarms of these insects have swept down from the north and destroyed almost every growing plant before them.

Every farmer in the Pampa knows the pampero, which brings a brief relief from summer heat. The pampero is a sudden storm with wind and rain and rolling clouds. The cool wind of the pampero blows from the south.

Winter comes to the Pampa in June, July,

and August. There are frosts sometimes, but it seldom snows. Winter weather is mild enough so that livestock can graze in the fields at any time. Winter is only a little less rainy than summer.

Wheat in the Pampa. Each year millions of bushels of wheat are grown in the Pampa. The farmers in the picture are harvesting wheat with big modern machines. In the Pampa, such machines can be used with profit. The fields are huge, the land is level, and there are no stumps or stones to interfere. There is always a market, too, for the wheat.

The wheat moves from field to railroad station in big horse-drawn wagons. At harvest time, huge stacks of sacked grain are piled at many points along the tracks, awaiting shipment. There are few grain elevators in the small towns of Argentina.

The wheat harvest usually is over by mid-summer, that is, about Christmas time. Soon after harvest, it is time to plow the fields again, and get ready for the next crop. In most of the Pampa, wheat is planted in late



Figure 250. Miles of corn

© Monkmeyer

autumn or early winter and grows through the mild winter season. It is harvested in late spring or early summer..

Most of the farm machines are pulled by horses, as in the pictures. Year by year, a few more tractors are used. But tractors and fuel are expensive. Horses are cheap, and pasture for them is plentiful.

Growing corn. As in the United States, so in Argentina, spring is corn-planting time. The corn grows rapidly and, within a few weeks after it is planted, men begin to cultivate it (Fig. 250). Corn is the second most important crop in the Pampa.

March, April, and May are busy months wherever corn is grown in the Pampa. This is autumn, and corn-husking time. The workers place the corn in sacks which they drag along with them. After the corn is hauled from the fields, it is piled in temporary cribs made with a few poles and some wire.

Most of the corn is shelled in winter, particularly in June and July. Some grain is sold to merchants in the farm villages, in order to pay for goods sold to the farmers

on credit while crops were growing. Many of these little villages, scattered along the railroads, are as drab as the homes of the tenant farmers.

Flax. The third most important crop in the Pampa is flax. It is cut and threshed like wheat. In Argentina, flax is grown for its seed, and not for the fiber in the stalk. Linseed oil, used in paint, is made from flaxseed.

Livestock. Cattle are first and sheep are second in importance among the livestock raised in the Pampa. Most of the cattle are raised for beef, although there are many dairy herds. Only a few hogs are raised in Argentina.

It takes only a few men to care for large herds of cattle or sheep in the Pampa, for the big pastures are fenced (Fig. 251), and windmills pump water for the animals. Occasionally a herd is moved from one fenced pasture to another. This is done so that no pasture will be damaged by over-grazing.

The first settlers in the Pampa found almost no trees. It was one vast prairie. Today, much of the Pampa remains in grass,



Figure 251. Beef cattle in huge pastures

a rich natural pasture. More than half of the land has never been plowed.

In recent times, however, many thousands of acres have been planted to alfalfa. A good field of alfalfa pasture will support several times as many cattle as a natural pasture of the same size. Alfalfa grows little during the cooler months, and many farmers plant oats or rye for use as winter pasture.

In Argentina, most cattle are fattened on alfalfa. Nearly all of the corn grown in the Pampa is shipped to markets overseas. Cattle are raised more cheaply in Argentina than in the United States. There are two main reasons for this. First, cattle are fattened in Argentina without corn. Second, there is good pasture there the year round.

Differences. Although certain crops and livestock are grown throughout the Pampa, farming is by no means the same everywhere. On one estancia, nearly all the land may be in pasture. On another, most of the land may be divided among tenant farmers who raise wheat, corn, or other crops. On still another estancia, the land may be divided between

pasture and crop land. And year by year, of course, there may be changes in the use of land within each estancia.

Most corn is grown northwest of Buenos Aires. There the soil and the hot rainy summers are well suited to corn. Flax is grown in and around the "corn belt."

Most wheat is grown west and south of the "corn belt." Wheat needs less heat and moisture than either corn or flax. Naturally, then, most of the wheat is grown on the drier and cooler side of the "corn belt."

There are, of course, other kinds of farms and crops in the Pampa. For instance there are many dairy farms and truck farms, especially near the large cities. Fruit is grown in many places. But the more important products of the Pampa are wheat, corn, flax, cattle, and sheep.

To market. The people who live in the Pampa can use only a small part of the things they produce. Also, they produce only a small part of the things they use. So they sell surplus grain and flaxseed and livestock, and buy fuel, machinery, cloth, and many

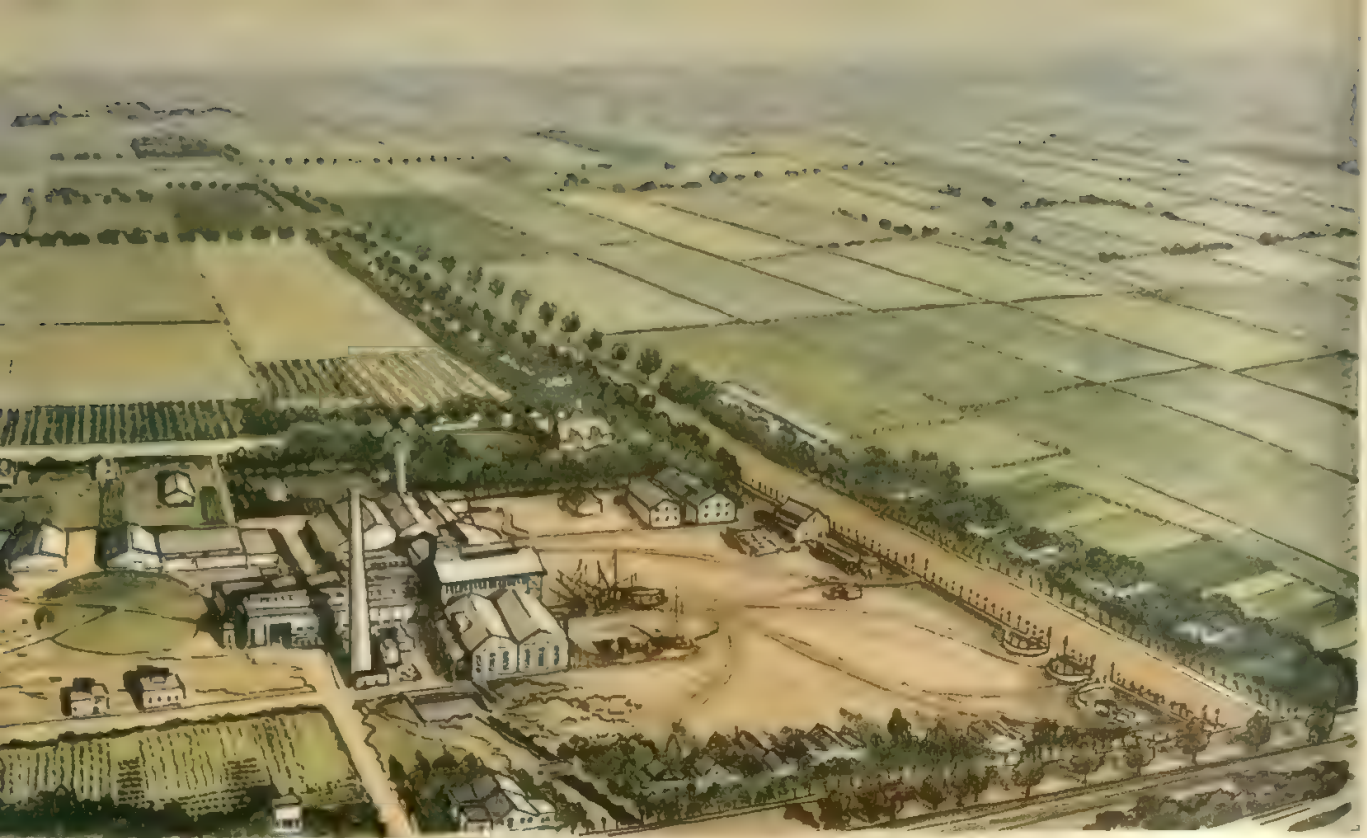


Figure 252. Near Tucumán, in the heart of the sugar-growing oasis

other things. Most of this trade is with countries overseas.

The railroads carry surplus farm products to the port cities and carry other freight back. Most cattle and sheep go by rail to packing plants in Buenos Aires. Huge amounts of grain are also shipped to Buenos Aires. Rosario, which is in the "corn belt," leads all ports in shipments of corn. Bahia Blanca, Figure 224, has much trade with the southern part of the Pampa.

In the Pampa, trucks are used very little, even for carrying products from farms to railroads. It is expensive to build good highways there. All stone or gravel must come from far away. Many country roads are wide strips of ground which, in most places, are either rough and dusty or impassable because of deep mud. On the other hand, railroad building is fairly cheap and easy in the Pampa. The land is nearly level and few bridges are needed.

The Pampa and Buenos Aires. The map on page 254 shows that the Pampa has the

greatest network of railroads in South America. Most of these railroads reach out from Buenos Aires, like spokes from the hub of a wheel. When we remember, then, that the Pampa has most of the people and the best resources of Argentina, it is not surprising that Buenos Aires is the leading city of the country.

Argentina is a young country. It has grown most during the past 100 years. Many things have helped to make this growth possible. A huge market for grain and meat developed overseas. Refrigerated ships and new kinds of farm machinery were invented. Thousands of people moved from Europe to Argentina. All these things have helped. The rich soils of the Pampa, the many railroads, and the modern ports also helped. Most of all, of course, the workers in the cities and in the fields made the country grow.

Beyond the Pampa. The lands beyond the Pampa in Argentina look large on a map. Yet these lands are small in importance, when compared with the Pampa. Travelers on the



Figure 253. In one of the hundreds of little oases near the Andes

west-bound train from Buenos Aires to Mendoza notice many changes as the Pampa is left behind (Fig. 224). The lands in western Argentina are dry. The villages and estancias are farther apart. Grass grows in scattered bunches. There are many herds of goats, as well as cattle and sheep. In a dry land, goats get along better than most other livestock.

The colored pictures (Figs. 252 and 253) show parts of two oases in the dry west. The oasis at Tucumán is large. The other oasis is small. Both these oases, and hundreds of others, are irrigated from streams which rise in the Andes Mountains.

Tucumán and Mendoza. In the Tucumán oasis, more than half of the irrigated land is planted to sugar cane. Tucumán is just far enough north so that sugar cane is not damaged by frost. In the picture the cane fields extend for miles across almost level land. Other fields near-by may be planted to such crops as corn and alfalfa. But in Tucumán sugar is king.

The sugar plantations are big and modern.

The mill in the picture gets sugar cane by the train load and makes sugar by the hundreds of tons. Many workers are needed in the mill and in the cane fields. Some of the workers live in the long line of houses shown in the picture.

Another large oasis surrounds the city of Mendoza, near the Andes, nearly five hundred miles south of Tucumán (Fig. 224). Once Mendoza was important as a pass city. From there travelers followed a route over the mountains to Chile. Now the Mendoza oasis is famous for growing grapes and making wine.

Along the Andes. The oasis shown in Figure 253 is a stopping place for highway travelers west of Mendoza. Part of the railroad from Mendoza to Chile, Figure 224, has been abandoned because of damage by floods. The highway in the picture is part of the road which has taken the place of about 100 miles of railroad track. The chain across the road stops traffic for police inspection, near the border.

Some people cross the Andes at a point near Puerto Montt in Chile (Fig. 224). By using this route, they can visit a famous National Park on the Argentine side of the Andes. In the park, there are beautiful forests and lakes and snow-capped mountains.

There is little trade between Argentina and Chile. One reason is, of course, the barrier of the Andes. Then, too, neither country has much to spare that the other country needs.

Patagonia. Southern Argentina is dry, cold, and windy. It is called Patagonia (Fig. 224). In Patagonia there are many sheep ranches, and many thousands of sheep. In most of it there is little else.

Most sheep ranches in Patagonia are very large. One shepherd usually cares for more than a thousand sheep. Little grass grows on the stony ground, so a large area is needed to provide pasture for such large flocks.

In most cases ranch headquarters is in a canyon, sheltered more or less from the cold winds that sweep across the plateau. At the ranch headquarters there are corrals, a few sheds, and the manager's home. It is a lonesome life for the manager and his family. The nearest school or town may be many miles away. It is even more lonesome for the men who are out with the flocks.

The sheep are sheared in spring, and usually by Christmas the wool crop is on its way to market. Wagons carry the wool from the ranches to a railroad station or to a port on the coast. Finally, most of the wool is carried in small ships to Buenos Aires.

A narrow strip of land along the Negro River has become the greatest oasis in Patagonia (Fig. 224). Water for irrigation has been brought to thousands of acres of land. The farmers grow grain or alfalfa or such fruits as pears and apples.

Oil in Patagonia. Nearly 50 years ago, men were drilling for water near Comodoro Rivadavia, on the coast of central Patagonia (Fig. 224). They were overjoyed when they

struck oil instead of water. This was a pleasant surprise for all Argentina, for the country has almost no coal and little wood. Today the oil fields at Comodoro Rivadavia supply most of the oil produced in Argentina. But Argentina still imports large amounts of coal and oil.

Warm North. Like Patagonia, the warm North of Argentina is a little used land. Part of it is called the "land between the rivers," meaning the land between the Paraná and Uruguay rivers (Fig. 224). Much of this area is grazing land for cattle and sheep.

In the northern part of the "land between the rivers" there are scattered plantations where yerba maté is grown. Yerba maté is a South American tea. Farther south, flax is an important crop. The Paraná River is not crossed by a bridge in its entire length. The river has held back the development of the "land between the rivers."

The Chaco. The name Gran Chaco is given to a vast area of low plains which begin in northern Argentina, and reach across western Paraguay, into eastern Bolivia (Fig. 224). Part of the land is forested and part is covered with grass. In the Argentine Chaco, most people make a living from raising cattle, working in the forest, or growing cotton.

Not nearly so many cattle are raised in the Chaco as in the Pampa. This is partly because of summer floods, winter drought, insects, and distance from market.

The leading forest product of the Chaco is quebracho, a very hard wood. The word itself means "ax-breaker." Some quebracho is used for fence posts and railroad ties in the Pampa. But most quebracho is cut for making tannin, which is used in tanning leather. In Figure 254 a load of quebracho logs is being weighed at a lumber camp in the Chaco.

The "cotton belt" of Argentina is near two railroads which extend west into the Chaco from the Paraná River near Corrientes (Fig. 224). This is a frontier land, settled chiefly



Figure 254. Piles of quebracho logs in the Chaco

in recent years. The farms are small, the adobe houses are poor, the hot rainy summers and dry winters are unpleasant, but the settlers manage to make a living. Cotton, like quebracho, is hauled to the nearest railroad by oxcart or wagon (Fig. 254). For both cotton and quebracho the Paraná River is the main road to market.

Farm and city. In this chapter most of the stories are about farm people. Yet Argentina is a land of cities, too. About two-thirds of the people in the country live in cities.

In Argentina both city and farm people depend for most of their living on the resources of the land. Most of the country's trade is handled by city people. But this trade is built largely on things produced in the fields of the Pampa. Thousands of people work in factories. Yet many of these factories prepare farm goods for market. Other fac-

tories use materials or fuel which the country gets from overseas in exchange for farm goods.

Manufacturing in Argentina is much handicapped by the fact that the country has almost no coal or iron ore. Unfortunately, too, the streams which might provide water power for making electricity are hundreds of miles from the places where power is most needed.

Things to Remember about Argentina

1. *"The Pampa has most of the people in the country and its most valuable resources."* With the help of three pictures, tell what the Pampa looks like, and how the people there make a living. Give reasons why these ways of working are well suited to the Pampa.
2. *The lands beyond the Pampa are small in importance when compared with the Pampa.*



Figure 255. Part of the crowded water front at Buenos Aires

Why? Tell about the use of two resources in the dry west, two resources in Patagonia. What part of Argentina reaches into the tropics? How do people make a living there?

3. *"Buenos Aires is a great meeting place, a center of trade and travel by land and sea."* Point out, on a map, the routes over which the following might be carried to Buenos Aires—cotton, sugar, cattle, grapes, oil, corn, wheat, yerba maté.

Exploring and Finding for Ourselves

The picture above shows a part of Buenos Aires which is not shown in the picture on page 281. The buildings in the distance are grain elevators. On the left, along the water front, are warehouses and office buildings. The barge in the foreground is loaded with coal.

1. Turn back to pages 281 and 282. Make a

list of the nine words in *italics* which describe Buenos Aires. Which of those words are suggested by the picture above? Which by the picture on page 281? Make a list of pictures you would need to take in order to suggest the rest of the words on the list.

2. Explain how workers in the factories of Buenos Aires depend on farmers. Which kinds of buildings in the picture would you expect to see in Kansas City or Minneapolis, and not in the West Indies? What does this suggest about farming in the Pampa?

3. Make a list of five products of Argentina which might be loaded into ships and carried overseas. Name five things which might be in ships coming from abroad. Should iron ore be on the first list? Why? Should coal be on the second list? Why? What does this tell about resources in Argentina?

Paraguay and Uruguay

Two small countries. Crowded between Argentina and Brazil are two small countries. Paraguay and Uruguay (Fig. 224). The names are somewhat alike, but the countries themselves are very different. Figures 256 and 257 show two places in Paraguay. The ranch shown in Figure 258 is in Uruguay. These pictures suggest some of many differences between the two countries.

Paraguay

Travel routes. Nearly everyone who goes to or from Paraguay travels by train or river boat. A few travel by airplane. Almost no one travels by automobile, because no good highway joins this country and its neighbors.

It is a slow journey by train or river boat from Paraguay to any of the great cities in neighboring countries. A railroad journey from Asunción, the capital of Paraguay, to Buenos Aires takes more than two days. A journey by river steamer between the same two cities takes nearly four days. Partly because of this slow transportation, Paraguay has developed less than some of its neighbors.

Asunción, the capital of Paraguay. Asunción is one of the most interesting centers of trade and travel in all South America. Every year hundreds of boats sail in and out of the busy harbor. North of Asunción the river is too shallow for the large passenger boats that come from Buenos Aires. But smaller boats make regular trips upstream, carrying freight and passengers as far north as Corumbá in Brazil (Fig. 224).

Asunción seems to be a mixture of many things. The government buildings, churches, and fine homes were built in the style of old Spain. Near the city limits there is an airport built in modern style. Trucks and auto-

mobiles move along the streets. But such traffic is often held up by long lines of ox-carts or heavily loaded donkeys.

In Asunción, as everywhere in Paraguay, an Indian language is spoken as much as Spanish. Nearly all the people are mestizos.

Most people in Asunción make a living from trade or government. There are few other cities in the country. Most people live outside of cities and make a living from forest work or herding livestock or farming.

Forest work. Figure 256 is a common scene in Paraguay. Patches of forest and grassland

Figure 256. On a ranch in Paraguay



are side by side. Many people in the country make a living from the sale of lumber or of yerba maté leaves which are used for tea.

The most valuable forest product comes from quebracho trees. Most quebracho trees are found along the Paraguay River in the edge of the Chaco (Fig. 224).

Oranges are plentiful and cheap in Paraguay. They grow not only in orchards, but also wild in the forest.

Ranching. Figure 256 shows part of a cattle ranch in Paraguay. On this ranch cattle graze both in the forest and in the open grasslands. The men on horseback are herders who ride for miles each day to look after the cattle. Not many of the cattle are of good quality, although in recent years some ranchers have greatly improved their herds. Hides and meat are important exports of Paraguay.

Most of the ranchers, and most all of the people in Paraguay, live on the plains and rolling hills east of the Paraguay River. The swampy lands of the Chaco, west of the river (Fig. 224), are not good for ranching or farming.

Farming. The picture in Figure 257 shows a small farm near Asunción. On little patches of ground beyond the house this farmer raises vegetables, corn, and even a few stalks of sugar cane. In the largest patch, cotton is grown as a money crop. The farmer has only a team of oxen, a plow, a hoe, and a few other simple tools to use in his work.

This farmer in the picture does not, of course, raise exactly the same crops as his neighbors. Many farmers raise tobacco as a money crop. But everywhere the farms are small, the farmers grow most of what they need for a living, and the leading money crop is cotton.

The oxcarts in the picture are filled with cotton on its way to a gin in Asunción. This is only the beginning of a very long trip to market. River boats carry the cotton to Buenos Aires, and ocean boats take it overseas.

The road in the picture is one of the best in all Paraguay. Good roads would help much to make possible better use of the resources of the country. Recently a fine paved highway was built southeast from Asunción. It has helped farmers who happen to live near it. Many more such roads are needed, for most of the people in the country are farmers.

Frontier land. Paraguay is often called a frontier land because it does not have many modern conveniences. It is also a frontier for settlers. In recent times, several thousand people from Canada and Europe have moved to Paraguay. They have built new homes and made new farms. There is plenty of room for many more settlers. Today less than one acre out of every hundred acres in the country is farmed.

Pioneer life is not easy. The people who, in recent times, moved to empty parts of Paraguay quickly discovered this. It takes much hard work to begin farming where the land has never been plowed, where there are no roads, no towns, no houses, and no extra laborers to help with the work.

Uruguay

Across the Rio de la Plata. Every evening a steamer leaves Buenos Aires and sails across the wide Rio de la Plata (river of silver). The next morning the passengers are landed at Montevideo, the capital and leading port of Uruguay (Fig. 224). This country has the great advantage of being on a main highway of ocean trade, while Paraguay is cut off from the sea.

Montevideo. Almost all the things said about Buenos Aires, on pages 281 and 282, may also be said about Montevideo. It is the greatest city in Uruguay. It is more than twenty times as large as the next largest city in the country.

Montevideo is not only an important port. It is also a fashionable resort city. Thousands



Figure 257. Farmers near Asunción

of people enjoy the fine beaches at Montevideo and at other places along the Rio de la Plata. The summer bathing season opens in December with a celebration called "the day of the beaches."

Like Buenos Aires and every other city, Montevideo does not live on its own resources. It is a center of trade and travel. Many people in Montevideo make a living from the travelers and the products that pass through the city.

Land of pastures. Figure 258 shows part of a large estancia in Uruguay. The men in the picture are driving sheep from one big pasture to another. Scenes like this are common throughout the country. Nearly everywhere the land is hilly. Trees line the streams. And more than nine acres out of every ten in the entire country are in pasture.

The sheep herders in the picture will return to the headquarters of the estancia when their work is done. In most of Uruguay, an

estancia headquarters is a group of low buildings surrounded by tall trees. The owner or manager lives in a one-story brick house, built around a patio. The workers live in simple adobe houses near-by. In a long shed, sheep are sheared and wool is stored.

The workers on an estancia have much to do besides driving the animals from pasture to pasture, and shearing sheep in the spring. Fences must be mended. Buildings sometimes need repair. In little gardens and orchards, the workers grow vegetables and fruits. There is no need to cut and store hay, for in the mild climate of Uruguay grass grows all through the year.

There are no cattle in the picture on page 294, but cattle as well as sheep are raised throughout Uruguay. Its exports are, among other things, hides, beef, and mutton. But wool is by far the most valuable product shipped to other lands. Most of the sheep are raised for their wool, not for meat.



Figure 258. On a ranch in Uruguay

Farm lands. Not all the land in Uruguay is pasture land. Both corn and wheat are grown in a narrow belt along the Rio de la Plata. In this part of the country many farmers combine the growing of various crops with the raising of livestock. In some places, especially near the cities, there are many orchards, dairy farms, and truck farms.

Wheat and corn and flax are the leading crops, as they are in the Argentine Pampa. In Uruguay most of the wheat and corn is used for food within the country. Nearly all the flaxseed is shipped overseas. But the wool which is exported has far greater value.

To market. Montevideo is on the main road to market for most products of the fields

and pastures. Each year, in the wool depots of the city, men sort and put in bags millions of pounds of wool. Figure 259 shows a big meat-packing plant near Montevideo. The chief business of the plant is preparing chilled or frozen meat for shipment overseas in refrigerated ships.

Things have changed much since Uruguay was discovered more than 400 years ago. In early days, half-wild cattle roamed over the hills. Men hunted these cattle to get hides and tallow. Most of the meat was wasted. Sheep were introduced, and soon a little wool was exported.

The greatest changes have taken place during the last 100 years. People in the grow-



Figure 259. Meat-packing plant near Montevideo

ing cities of Europe needed more meat and wool than could be produced in their own countries. To help supply this market, the ranchers in Uruguay improved their herds and raised more sheep and cattle. Montevideo and other cities in the country grew as the trade in wool and meat grew.

For a time most of the meat shipped overseas was dried and salted so that it would not spoil. Then refrigerated ships began to sail back and forth across the Atlantic. About 50 years ago the first plant for freezing or chilling meat was built in Uruguay. Today nearly all the meat exports are frozen or chilled beef or mutton.

Prosperous Uruguay. Overseas markets have helped to make Uruguay prosperous. In exchange for meat and wool and a few other things, the people get many kinds of goods which help them to live well.

Things to Remember about Paraguay and Uruguay

1. *Uruguay is on a main highway of ocean trade, while Paraguay is cut off from the sea.*

What difference does this make to farmers and ranchers in each country? How do most people travel to or from Paraguay?

2. *Most people in Paraguay make a living from forest work, ranching, or farming. How is this like northern Argentina?*

3. *Paraguay is a frontier for settlement. With the help of pictures and stories in this chapter and in the chapter on Argentina, tell what a settler might see on a trip from Buenos Aires to a farm near Asunción. Tell about two problems of frontier life in Paraguay.*

4. *In one way or another most people in Uruguay depend on ranching for a living. Explain how work in Montevideo may have much to do with ranching.*

5. *Recent changes in markets and in transportation have changed ranching in Uruguay. Explain why.*

Exploring and Finding for Ourselves

1. From what five countries do streams flow to the Rio de la Plata?

2. What do the lines of latitude (p. 229) suggest about differences in winter weather in Paraguay and Uruguay? Is the noon sun ever overhead in Montevideo? In Asunción?



Figure 260. Looking across Rio de Janeiro to the famous Sugar Loaf

Brazil

Big but nearly all empty. Brazil is by far the largest country in Latin America. It fills almost half of the continent of South America (Fig. 224). Brazil is even a little larger than the United States.

The map on page 228 shows that nearly all Brazilians live near the east coast. Part of Brazil was settled earlier than any of the United States. Yet today, pioneers still are moving out to new land there.

Rio de Janeiro

A famous capital. The picture shows part of Rio de Janeiro (Fig. 224), the capital and

largest city of Brazil. The water at the upper right is part of the Atlantic Ocean. The mountains are part of the Brazilian Highlands.

Rio de Janeiro is famous for its beauty. Each year thousands of visitors come to see the city. From high in the air, it looks like a carpet of many bright colors. When viewed from the bay, it seems to be on a huge platform, with mountains like curtains behind it. Ships enter the bay just beyond the short peninsula in the center of the picture. The high rocky peak on the peninsula is called Sugar Loaf Mountain. To the early explorers it looked like a loaf of sugar.

Many things in Rio de Janeiro are as beautiful as its setting. Tall palm trees grow along many streets. Some sidewalks are made with patterns in color. There are many fine buildings, including government offices and the homes of the wealthy. Along a famous beach and boulevard, the hotels and apartment houses are as modern as any in the world. Of course Rio de Janeiro, like most big cities, has some homes of which it cannot be proud.

People in Rio de Janeiro. The language of Rio de Janeiro, and of all Brazil, is Portuguese. Explorers from Portugal came to the east coast of South America at about the same time that Spanish explorers reached the West Indies and the near-by mainland.

Some people who now live in Brazil are descendants of white Europeans. Many others are Negroes or Indians or of mixed races.

A living in Rio de Janeiro. Making a living in this city is much like making a living in any other capital city which is also a seaport, a city of factories, and a city of trade. In Figure 224, Rio de Janeiro appears to be in a corner of Brazil, and perhaps in a poor place for trade. Actually it has a good location. It is near the middle of the east coast, where most of the people live.

The fine harbor at Rio de Janeiro has helped the city grow, for ocean ships carry much of the trade. Streams in the near-by highlands also have helped. These streams furnish water power for making electricity.

Central Eastern Brazil

Near Rio de Janeiro. The capital and the lands near it are in the region called Central Eastern Brazil. This region extends north about halfway to São Salvador (Fig. 224). It reaches southwest somewhat beyond Santos and São Paulo. To the northwest the region extends about as far as railroads have been built in that direction.

One of the colored pictures on the next

page shows a coffee farm in Central Eastern Brazil. The other picture shows a nearby cotton farm. More than half of all the coffee in the world is grown in this region. The soil and mild climate are well suited to growing coffee. Other crops, including cotton, are grown side by side with coffee.

A coffee fazenda. A large coffee farm in Brazil is called a coffee fazenda. The fazenda in the picture looks like many others in Central Eastern Brazil.

The trees are planted on the hilltops and on the higher slopes to avoid frost. In winter, cool air collects along the valley bottoms, and there frost may occur. Trees on the upper slopes seldom are damaged by frost.

On most coffee fazendas, coffee trees cover much less than half of the land. The lower slopes are used for pasture, woodland, or food crops. The corrals in the picture may seem out of place on a coffee fazenda. But they are not. Many workers depend on cattle and hogs for part of their living.

Most of the work on a coffee fazenda is done by colonos. A colono is a man who agrees to care for a certain group of coffee trees. He is paid a share of the crop. Other workers are paid in money.

The picture shows several small houses where colonos or other workers live. On a large fazenda, there are more houses. There also may be a store, church, school, and perhaps even a motion-picture theater.

Harvest of coffee. The workers on the coffee fazendas are busy both summer and winter. During the long, hot, rainy summer they cultivate the soil and kill the weeds around the trees. The cool, dry winter is the harvest season. The work of harvesting coffee usually begins in May and lasts until early September.

On the fazendas in Brazil there are not enough workers to pick each coffee berry by hand, as in Colombia and Central America. Instead, the Brazilian workers strip both ripe and green berries from the branches at

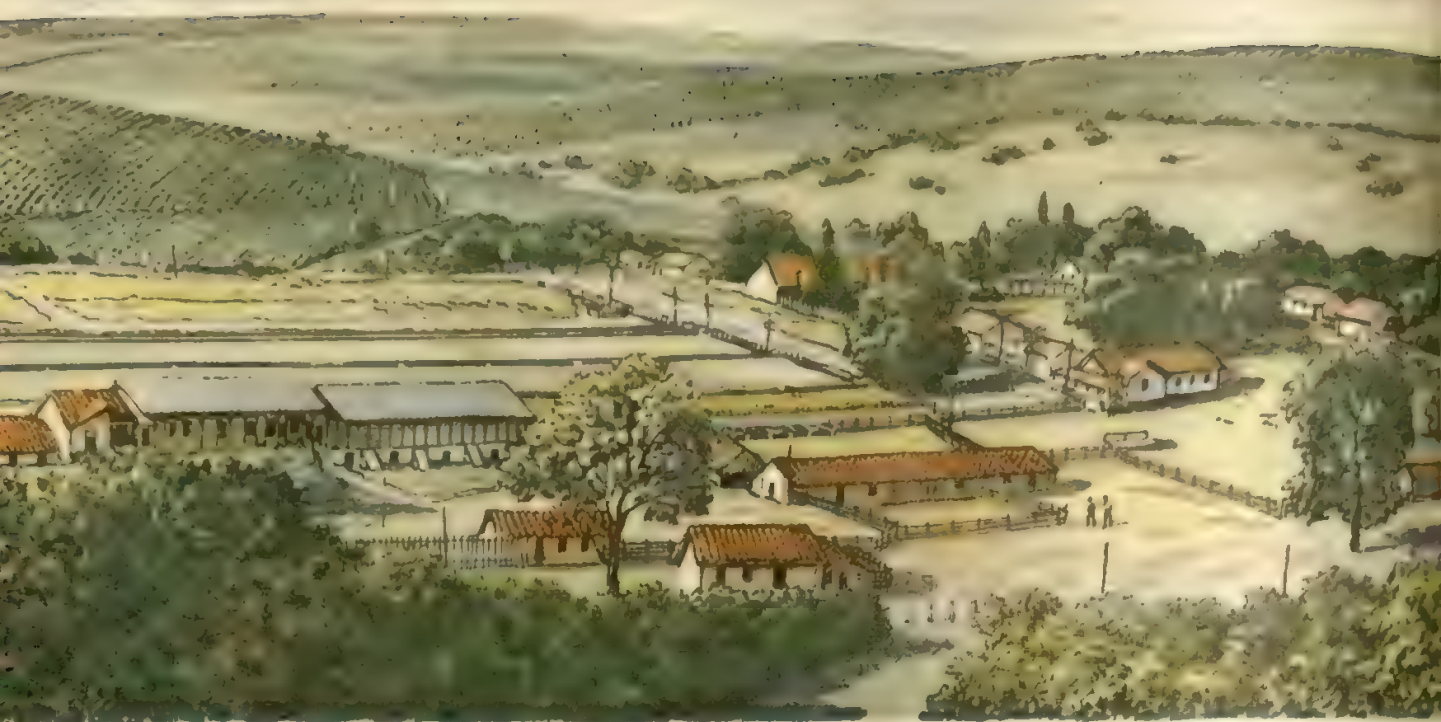


Figure 261. Headquarters of a coffee fazenda

Figure 262. On a big cotton fazenda



one time. The coffee berries, together with some leaves and twigs, fall to the ground.

At fazenda headquarters, the ripe berries are separated from the green berries and from any sticks and leaves. Later, the coffee is dried. Both ripe and green berries are marketed. Of course, the ripe berries are worth more than the others.

The long platforms in the picture are used for drying coffee. A layer a few inches thick is spread over each platform. Perhaps twice a day the workers turn all this coffee, so that it will dry properly. In case of rain, they quickly gather the coffee in piles and cover each pile with a canvas. The almost rainless winter in Central Eastern Brazil is a good time for the coffee harvest.

To market. After the coffee is dried and all husks have been removed, the crop is graded and then sacked for shipment. In carts, wagons, or trucks it is hauled to a railroad. Finally, train loads of coffee are collected at one port, Santos (Fig. 224).

From July until about Christmas, Santos is a very busy place. Thousands of men work along the water front, where there are huge warehouses and long docks. Dozens of ships may be loaded at one time.

Santos is the greatest coffee port in the world. Coffee is the leading export of Brazil, and most of the crop goes to the United States. All of the coffee which is exported is roasted in the countries to which it is sold.

Too much coffee. In Brazil the growing of coffee has increased greatly during the last 100 years. As people overseas bought more and more coffee, millions of new trees were planted in Brazil. Thousands of workers moved from Europe to the coffee lands. Suddenly, the Brazilian coffee growers found that they were growing much more coffee than the world would buy. Millions of bags of coffee were destroyed because there was no market for it.

The rush to grow coffee caused a great waste of land. As the market for coffee in-

creased, millions of acres of new land were cleared and planted to coffee. Some of the land was poorly cared for. In a few years many worn out fields were left behind as the coffee planters moved on to a new frontier. Some of these fields now grow nothing more than grass. This waste of land was much the same as that in the tobacco country, in the early days in the United States. The tobacco planters followed a plan described as "cut down, wear out, and walk off" (p. 27).

Cotton in the land of coffee. Today Brazil depends less on its famous coffee than it did 25 years ago. On many fazendas, cotton has taken the place of coffee. Next to coffee, cotton is now the leading export of the country.

The people in Figure 262 live on a big cotton fazenda near São Paulo (Fig. 224). At picking time the entire family helps with work in the field.

Central Eastern Brazil has many advantages for growing cotton. The plants grow well during the hot, rainy summer. The dry weather in autumn and early winter is just right for picking cotton. Also, new factories in this part of Brazil use much cotton for making cloth.

Other crops and other farmers. Even in the heart of the coffee lands, less than half of the farm land is in coffee. In some of the fields the farm workers grow most of their own food. They raise corn, rice, beans, sugar cane, mandioca, and fruit. Mandioca is a root which looks somewhat like a long sweet potato. Tapioca and various starches are made from mandioca. In Brazil, mandioca is cooked or baked in many different ways. The daily food of the common people is rice, beans, and mandioca.

In recent years, there has been an "orange boom" in Central Eastern Brazil. Some farmers have found that they can make more money growing oranges than either coffee or cotton. Oranges from Brazil have a good market in Europe. One reason is that Brazilian oranges ripen in the "off season" for

fruit in countries north of the equator. Bananas are grown for food in many places, and they are exported from plantations in the hot lowlands near Santos.

São Paulo. Rio de Janeiro, Santos, and São Paulo are the leading three business centers in Central Eastern Brazil. Next to Rio de Janeiro, São Paulo is the largest city in the country. The coffee and cotton lands help to explain its size. Many wealthy owners of coffee fazendas live in São Paulo.

São Paulo grew rapidly during the "coffee rush." Today it is a great center of both trade and manufacturing. Cloth is the most important product of the factories. Workers in the factories also make such things as machinery, cement, chemicals, leather goods, and furniture.

Water power has been a great help to manufacturing in São Paulo. Much of the electricity used in the city is made near Santos, where a stream tumbles hundreds of feet over the edge of the Brazilian Highlands.

São Paulo is also an important cattle market. Some cattle come from farms and fazendas near-by. Many of them are raised in the open spaces far to the west in the interior of Brazil.

Mining. About 200 years ago there was a gold rush in Brazil which, in some ways, was like the famous gold rush which came later in the United States. Gold was discovered in the Brazilian Highlands north of Rio de Janeiro. The rush to the gold fields helped establish Rio de Janeiro as a city. Later, diamonds were discovered and more people went out to seek their fortunes.

Many of the prospectors returned to the coast as poor as when they had left. Others stayed as farmers in the highlands. Only a few found the fortunes they were seeking.

Gold, diamonds, manganese, and iron ore are now mined in the Brazilian Highlands. In iron ore, Brazil is one of the richest countries in the world. It is said to have "mountains of iron." Only a little of the

ore is mined, partly because Brazil has almost no coal for smelting. Perhaps in years to come Brazil may be able to make better use of its vast mineral resources.

Southern Brazil

Frontier in the cool South. Southern Brazil extends from Central Eastern Brazil to Uruguay, and from the Atlantic Ocean to Paraguay (Fig. 224). A large part of the region is a forested plateau. In some places there are prairies. Since these lands are outside of the tropics, winter weather is chilly and there are occasional frosts. In most places, such crops as coffee cannot be grown.

The first settlers in Brazil made their homes in the northeastern part of the country. Later, many people came to Central Eastern Brazil. They founded Rio de Janeiro and other cities near-by. It was not until about a hundred years ago that settlers in large numbers moved into Southern Brazil.

Cities grew up in Southern Brazil as new settlers came by the thousands. Scattered over the region today are many fine villages with good schools, churches, and modern stores. But much of Southern Brazil is still a frontier land.

Farming in Southern Brazil. The farm in Figure 263 is a frontier farm in a forest clearing. The farmer's wife and children are standing near the house. This family came from Poland. Their neighbors may have come from Germany, Italy, Russia, or other countries in Europe. In this frontier land, there are few Indians or Negroes.

In small fields, dotted with stumps, the Polish farmer grows corn, potatoes, and beans. Most of the work is done by hand. The farmer has about twenty hogs and a dozen cattle. Part of the corn crop is fed to the hogs. When the farmer sells a few hogs or cattle, he drives them through the forest to a market village on a railroad.

In some places, farmers grow tobacco,



Figure 263. Home of a pioneer farmer in Southern Brazil

© Ewing Galloway

grapes, or rice. Those who live near a railroad are able to ship corn, wheat, or other grains to market. Several million cattle and sheep are raised, many of them in prairie lands near Uruguay. But there is still plenty of room for many more people to make a living from the land.

Forests. The frontier farmers have made much use of the forests. Every building in Figure 263 is made of wood. All the fences and gates are of wood. Most of the lumber was made at a frontier sawmill.

Lumber from Southern Brazil is used outside of the region, too. Large shipments go by boat to Central Eastern Brazil, Uruguay, and Argentina. Nearly all the lumber comes from Parana pine trees. For miles and miles in the forest there are few trees of other kinds. This helps to make lumbering easy.

Most lumber camps in Southern Brazil are along the few railroads. Many more railroads will be needed if all the forest resources are to be used.

Yerba maté. In scattered places in this forest, as in forests of Paraguay and Argentina, men make a living by cutting branches from yerba maté trees. The leaves are roasted and then used for making tea. Some yerba maté is collected from wild trees. There also are plantations where yerba maté branches are harvested as a crop.

Looking ahead. The map on page 254 shows Porto Alegre and Rio Grande, in Southern Brazil. Nearly all of their business depends on lumbering or farming. These and other cities will continue to grow as farming and forest work increase.

Many people believe that Southern Brazil will be much more important in the future than it is now. The region has rich soils, large forests, and a temperate climate. The largest supplies of coal are in this region. Most of it is not good enough for smelting, but it can be used for fuel. Some day great electric power plants may be built at Iguassú Falls, on the Paraná River (Fig. 224).



Figure 264. "Uptown" and "downtown" in São Salvador

© Ewing Gullaway

Changes in Southern Brazil may come slowly. It takes years of hard work to change a frontier land into a land of big cities and factories and modern farms.

Northeastern Brazil

Between Rio de Janeiro and the Amazon. Northeastern Brazil extends from Central Eastern Brazil to lands near the mouth of the Amazon River. Most of the people live along the rainy coast. Few live in the dry plateau. Wet or dry, Northeastern Brazil is a tropical land where winter never comes.

São Salvador. The picture shows part of São Salvador, the largest city in Northeastern

Brazil. This is a seaport city, built on two levels. The people in the picture are in the lower city, along the water front. In this part of the city are warehouses, small factories, banks, business offices, and public markets.

Some farmers who live along the coast near the city bring vegetables and fruit to market in little boats like those in the picture. Other small boats are used for fishing or for trade with people who live across the bay. The picture does not show any of the large ocean ships which sail to and from São Salvador.

The upper city, on the hill, has most of the fine shops, hotels, and homes in São Salvador. In the tall tower is a modern elevator.

It carries people up and down between the two levels in the city.

São Salvador is only one of many cities, large and small, along the coast of Northeastern Brazil. Ocean ships carry most of the traffic between them. Railroads carry goods to and from the coast more than along the coast. There are no railroads connecting Northeastern Brazil with neighboring lands.

Sugar lands. For about 300 years sugar cane has been grown along the northeastern coast. As one might expect, most of the cane is grown on plantations in the rainy coastal lowlands. Recife is one of the leading sugar ports.

In early days, Northeastern Brazil exported large amounts of sugar. Now, nearly all the crop is used within the country.

There are several things which help to explain why Brazil now exports little sugar. One reason is that sugar plantations in the West Indies, using new machinery, produce sugar at lower cost. Another reason is the problem of getting workers in Brazil. For a long time, the plantation owners in Brazil depended on Negro slaves. After the slaves were freed, more than 50 years ago, it cost more to get men to work in the fields of sugar cane.

Most of the Negroes stayed on in the same villages. Now in Northeastern Brazil, more than half the people are Negro or of mixed races.

Cacao, a tree crop. Cacao, like sugar cane, is an old crop in the American tropics. The Indians were growing it when the first explorers came.

Nearly all of Brazil's cacao crop is grown near the coast, southwest of São Salvador. Men have found that this coastal lowland is a good place for cacao. It needs hot, rainy weather the year around. Forest trees protect the cacao trees from wind.

Cacao beans are found inside large pods, about the size of small melons. These pods grow on the trunks and branches of the trees.

Workers collect the pods and cut them open to get the cacao beans that are inside. The beans are then fermented, dried, and finally carried through the forest to a branch railroad or port city. Most of the cacao is shipped to the United States, where much of it is used in making cocoa or chocolate.

Cacao and sugar cane are only two of the money crops grown along the coast of Northeastern Brazil. Many farmers grow cotton or tobacco. On farms, both large and small, there are food crops—corn, beans, rice, bananas, mandioca, and others.

Dry land in the tropics. The interior of Northeastern Brazil is a dry, hilly plateau. Only a few people live there (Figs. 204 and 224). Some are herders who tend goats and cattle. Others are farmers. Many of these farmers live along the edge of the plateau, where there is a little more rain than farther inland.

Cotton is an important money crop to the plateau farmers. Much of it is a kind called "tree cotton," which grows for five years or more without replanting. It can stand dry weather.

Droughts sometimes come to the plateau. Both people and animals have died of hunger and thirst during severe droughts. The government is now building reservoirs and planning irrigation to help the people living in this part of Brazil.

Wax from trees. Some people in Northeastern Brazil make a living from carnauba palm trees. These trees grow well along river banks and in valleys on the plateau. During the dry season, a coating of fine powder forms on the leaves, helping to protect them from loss of water by evaporation.

Men have found that this powder can be collected and melted to make a valuable wax. Carnauba wax is used in making many things, phonograph records, furniture polish, and even lipstick. In most years, Brazil gets about as much money from exports of carnauba wax as from exports of cacao.



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Figure 265. A lonely home on the great river

The Amazon Lowland

A land of rivers and forests. The largest river in the world is the Amazon (Fig. 224). It rises in the Andes within 100 miles of the Pacific coast and flows all the way across the continent to the Atlantic Ocean. No other stream carries as much water. In several places the river is so wide that a man standing on one bank cannot see the opposite bank. Sometimes the muddy waters of the Amazon color the ocean more than a hundred miles from the coast.

Forests cover most of the land in the Amazon Lowland. The picture suggests how hard it would be to build roads there. Nearly all travel is by boat, as suggested by the picture on the opposite page. As one should expect, this is a lonely land where few people live.

A home in the forest. The map shows two cities, Belém and Manaus, in the Amazon region. Except for the people who live in these two cities and a few smaller places, the people of the Amazon are widely scattered. Most are Indians, or mestizos, or whites. Nearly all of them live in houses as simple as the house in the picture above.

The house is made largely of leaves and poles from the forest. The floor is on top of posts set in the ground. This helps to keep out insects and makes the house a little cooler. Day and night, all through the year, the weather is warm or hot. Yet the temperature is never as high as it may be on a very hot summer day in central United States.

The leaves on the roof are a good protection from the heavy rains which may fall at any time of year. Most rain along the Amazon comes in afternoon showers. The nights and mornings usually are clear. By noon, thunder clouds may rise high in the sky. Then comes a sudden, heavy downpour of rain. Before evening the sky is clear again, but all the land is soaking wet. Even during heavy storms the family that lives in the little home in the picture is able to keep dry.

Making a living. When the first explorers came to the Amazon they found a few Indian tribes in the forest. These Indians got part of their food from little gardens in forest clearings. They also hunted, fished, and collected food in the forest. Today, many of the people along the Amazon make a living in much the same way. Their chief food crops are corn, mandioca, bananas, and rice.

There is little commercial farming in the Amazon Lowland. Here and there, plantations have been started. Cattle are grazed in scattered open grasslands. Near the few cities, men grow food crops to sell. Even so, some of the food for the cities comes from outside the Amazon region.

The Amazon forest has many valuable trees, but several things make lumbering difficult. The valuable trees are scattered widely among hundreds of other kinds. Workers are scarce. It is hard to build roads back from the rivers.

For export, the most valuable products of the Amazon Lowland are Brazil nuts and rubber. Brazil nuts are gathered after they ripen and fall from the trees.



Figure 266. Along the Amazon highway

© James Saunders

Rubber. The house in Figure 265 is the home of a rubber worker. During the less rainy season, he makes daily trips through the forest, collecting the milky juice, called latex, from as many as 200 scattered rubber trees. In the morning he cuts into the bark of a tree and hangs a cup underneath the cut to catch the latex. Later, he returns to collect the latex. In the evening he builds a fire and, with heat and smoke, hardens the latex into a ball of rubber.

In one day a worker sees hundreds of birds, many monkeys, and perhaps several snakes. Insects are often the most dangerous things in the forest. Mosquitoes and other insects may carry diseases which are very harmful to man. Living and working in the Amazon forest is difficult.

Most of the rubber workers sell their rub-

ber to merchants at trading posts on the river. There a worker can buy cloth, medicine, and a knife, or some other simple tool. Often these merchants have furnished such supplies in advance. Many of the workers are always in debt to the merchants.

At one time the Amazon region produced nearly all the rubber in the world. Then men planted rubber trees on big plantations in southeastern Asia. There they produce rubber at less than the cost of gathering wild rubber in Brazil. A plantation worker can care for several hundred trees. Also in southeastern Asia there is a much larger supply of workers than in Brazil. Today rubber from the Amazon Lowland is of little importance in the world.

In recent years, an American company has been growing rubber on plantations along



Figure 267. Airways of Latin America

the Amazon. Scientists who work for this company have solved many problems. They have learned how rubber can be raised in larger amounts. But they have not solved the problem of labor. There are not enough workers to care for big new plantations.

Markets in the Amazon. The river is the road to market, throughout the Amazon region. In small boats, like some of those in Figure 266, Brazil nuts, rubber, and other products are brought to the trading posts. Larger boats carry the products downstream, to centers such as Manáos or Belém. The steamer in the picture sails back and forth between Belém and ports hundreds of miles upstream.

In Belém and Manáos there are streetcars, automobiles, hotels, theaters, and thousands of people. At Manáos is a famous opera house built at great expense "when rubber was king" in the Amazon. Both cities are really big trading posts. Most of the people in them, like those in little trading posts far up the river, make a living by buying the

products of the Amazon Lowland and selling manufactured goods.

Interior Brazil

Another frontier. The lands south of the Amazon Lowland, and west of Northeastern and Central Eastern Brazil, are called Interior Brazil (Fig. 224). Few people live in this region. It has no highways or railroads, except for the railroad near Corumbá (Fig. 224). Falls on the tributaries of the Amazon hold back travel by river from the north.

Most of the people of Interior Brazil live by ranching. Their cattle and sheep graze on grasslands and in patches of forest. Herds of cattle are driven east for many miles, to markets in São Paulo and other cities.

Interior Brazil, even more than Southern Brazil, is a frontier land. With more settlers and good transportation it might become an important part of the Brazil of the future.

Air Transportation

By land, sea, and air. Year by year people are able to travel about in Brazil much more easily than ever before. One reason is that new highways have been built in many places. Also airplanes are flying regularly, back and forth across the country. The map shows how large a part of Brazil is now served by air transportation. Of course, most of the air lines are along the east coast where nearly all the people live.

One of the great advantages of air transportation is speed. Today a business man in Rio de Janeiro, who wishes to go to Belém in the Amazon Lowland, need not spend several days on a steamer. Instead, he can fly to Belém in a few hours.

The air route from Rio de Janeiro to Cuiabá (Fig. 224), far away in the interior of Brazil, suggests a second great advantage of air transportation. Cuiabá cannot be reached by railroad, highway, or water route.

Men in airplanes can fly over the barriers which hold back travel in any other way.

The picture was taken from an airplane flying over the Amazon River. The shadow of the plane is clearly seen on the water. Along the river bank, the forest forms a solid wall. It would be very hard to build a road there. The airplane can fly swiftly over the dense forest.

Neighbors by air. Figure 267 shows that Brazil is now joined with every other country in Latin America by air lines. This means much both to people in Brazil and in the other countries. Before air lines were established, these countries were far apart in travel time. Now they are close together, in travel time, by air.

Air travel has also made Brazil a near neighbor of the United States. It takes less time to fly from Florida to Belém, Brazil, than to travel by train from Chicago to Florida.

Things to Remember about Brazil

1. *Brazil is a frontier country. Millions of people live in cities or on farms along part of the coast. But most of Brazil is an empty land. Look at the picture of a frontier farm (Fig. 263) and the picture of Rio de Janeiro (Fig. 260). Then tell in what ways living on the frontier is different from living in the capital city. So far, which has made the greater progress, Southern Brazil or Interior Brazil? Why?*

2. *Central Eastern Brazil is a land of farms, cities, and mines. How have the farms helped the leading three cities? Explain why "Today Brazil depends less on its famous coffee than it did 25 years ago." Name two advantages for growing cotton in this region. Why is there only a little mining of iron ore?*

3. *Northeastern Brazil is a tropical land, where leading money crops are sugar cane, cacao, and cotton. Using maps on pages 254 and 264, show where each crop is grown and why it is grown there. How does work in this region depend in part upon the West Indies?*

4. *The region of the Amazon Lowland is a*



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Figure 268. Open airways above trackless forests

hot, rainy, forest-covered land where few people live. Why is much less rubber collected now than years ago? Suppose a traveler went from Belém to Iquitos by river steamer. Tell what kinds of homes and work he might see if he stopped here and there along the way.

5. *Air transportation is bringing people closer together in travel time. Explain two great advantages of air transportation.*

Exploring and Finding for Ourselves

1. Use the population map (Fig. 204) to explain why Rio de Janeiro has a good location for trade.

2. Use two maps (Figs. 224 and 267) in comparing land travel and air travel from La Paz, Bolivia, to São Paulo, Brazil; from Mexico City to Panamá; from Lima to Quito; and from Belém to Trinidad.

3. Name four forest products besides lumber, and show where each may be found in Brazil. Why is there little lumbering in the Amazon Lowland?

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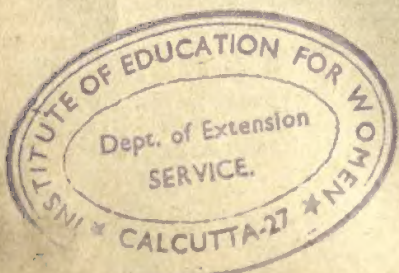
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Facts for Reference

The following information concerns various areas, populations, and distances in THE AMERICAN CONTINENTS. The figures represent the latest available statistics or estimates. It may be, of course, that these figures are not exactly the same as those published in other books. There are several reasons for the differences. Not all countries take a census at the same time, nor in the same way. Various people may make various estimates of population. The area of inland waters may, or may not, be included in the area of a country.

The figures presented in these tables have been gathered from various sources. Some material has been reprinted from *The Encyclopaedia Britannica World Atlas, Complete with Geographical Summaries and World Spheres of Influence*, by permission of its publisher, The Encyclopaedia Britannica, Inc. Other information is used by courtesy of the Pan American Associates, publishers of *The Pan American Yearbook*. The facts about the area and

population of the United States and of Canada were supplied by the *Bureau of Census, United States Department of Commerce*, and the *Canada Yearbook*, respectively. The information about distances by air and by sea was received from Pan American World Airways, Air-Age Education Research, Bureau of American Airlines, and the United Fruit Company.

THESE FACTS FOR REFERENCE were selected from a vast amount of available information. It would be impossible even to count all the things which are known about the American Continents. For example, one could fill hundreds of pages with the names of islands alone, and still the list of islands would not be complete. Most of these islands are small and unimportant. Naturally, then, only the more important facts have been included in the following tables—facts which readily can be used to increase one's understanding of the geography of the American Continents.

THE AMERICAN CONTINENTS

	AREA IN SQUARE MILES	POPULATION
North America (Including Mexico and Central America).....	9,033,531	171,633,981
South America.....	7,085,357	91,368,605

THE UNITED STATES

	AREA IN Sq. Mi.	POPULATION	CAPITAL CITY	POPULATION OF CAPITAL
THE UNITED STATES.....	3,022,387	131,669,275	Washington, D.C.....	663,091
Alabama.....	51,609	2,832,961	Montgomery.....	78,084
Arizona.....	113,909	409,261	Phoenix.....	65,414
Arkansas.....	53,103	1,949,387	Little Rock.....	88,039
California.....	158,693	6,907,387	Sacramento.....	105,958
Colorado.....	104,247	1,123,296	Denver.....	322,412
Connecticut.....	5,009	1,709,242	Hartford.....	166,267
Delaware.....	2,057	266,505	Dover.....	5,517
Florida.....	58,560	1,897,414	Tallahassee.....	16,240
Georgia.....	58,876	3,123,723	Atlanta.....	302,288
Idaho.....	83,557	524,873	Boise.....	26,130
Illinois.....	56,400	7,897,241	Springfield.....	75,503
Indiana.....	36,291	3,427,796	Indianapolis.....	386,972
Iowa.....	56,280	2,538,268	Des Moines.....	159,819
Kansas.....	82,276	1,801,028	Topeka.....	67,833
Kentucky.....	40,395	2,845,627	Frankfort.....	11,492
Louisiana.....	48,522	2,363,880	Baton Rouge.....	34,719
Maine.....	33,215	847,228	Augusta.....	19,360
Maryland.....	10,577	1,821,244	Annapolis.....	13,069
Massachusetts.....	8,257	4,316,721	Boston.....	770,816
Michigan.....	58,216	5,256,106	Lansing.....	78,753
Minnesota.....	84,068	2,792,300	St. Paul.....	287,736
Mississippi.....	47,716	2,183,796	Jackson.....	62,107
Missouri.....	69,674	3,784,664	Jefferson City.....	24,268
Montana.....	147,138	559,456	Helena.....	15,056
Nebraska.....	77,237	1,315,834	Lincoln.....	81,984
Nevada.....	110,540	110,247	Carson City.....	2,478
New Hampshire.....	9,304	491,524	Concord.....	27,171
New Jersey.....	7,836	4,160,165	Trenton.....	124,697
New Mexico.....	121,666	531,818	Santa Fe.....	20,325
New York.....	49,576	13,479,142	Albany.....	130,577
North Carolina.....	52,712	3,571,623	Raleigh.....	46,897
North Dakota.....	70,665	641,935	Bismarck.....	15,496
Ohio.....	41,222	6,907,612	Columbus.....	306,087
Oklahoma.....	69,919	2,336,434	Oklahoma City.....	204,424
Oregon.....	96,981	1,089,684	Salem.....	30,908
Pennsylvania.....	45,333	9,900,180	Harrisburg.....	83,893
Rhode Island.....	1,214	713,346	Providence.....	253,504
South Carolina.....	31,055	1,899,804	Columbia.....	62,396
South Dakota.....	77,047	642,961	Pierre.....	4,322
Tennessee.....	42,246	2,915,841	Nashville.....	167,402
Texas.....	267,339	6,414,824	Austin.....	87,930
Utah.....	84,916	550,310	Salt Lake City.....	149,934
Vermont.....	9,609	359,231	Montpelier.....	8,006

	AREA IN Sq. Mi.	POPULATION	CAPITAL CITY	POPULATION OF CAPITAL
Virginia.....	40,815	2,877,773	Richmond.....	193,042
Washington.....	68,192	1,736,191	Olympia.....	13,254
West Virginia.....	24,181	1,901,974	Charleston.....	67,914
Wisconsin.....	56,154	3,137,587	Madison.....	67,447
Wyoming.....	97,914	250,742	Cheyenne.....	22,474
District of Columbia.....	69	663,091	Washington.....	663,091

CITIES IN THE UNITED STATES, WHICH HAVE MORE THAN 100,000 INHABITANTS

CITY	POPULATION	CITY	POPULATION	CITY	POPULATION
Akron, Ohio.....	244,791	Hartford, Conn.....	166,267	Portland, Ore.....	305,394
Albany, N. Y.....	130,577	Houston, Tex.....	384,514	Providence, R. I.....	253,504
Atlanta, Ga.....	302,288	Indianapolis, Ind.....	386,972	Reading, Pa.....	110,568
Baltimore, Md.....	859,100	Jacksonville, Fla.....	173,065	Richmond, Va.....	193,042
Birmingham, Ala.....	267,583	Jersey City, N. J.....	301,173	Rochester, N. Y.....	324,975
Boston, Mass.....	770,816	Kansas City, Kan.....	121,458	Sacramento, Calif.....	105,958
Bridgeport, Conn.....	147,121	Kansas City, Mo.....	399,178	St. Louis, Mo.....	816,048
Buffalo, N. Y.....	575,901	Knoxville, Tenn.....	111,580	St. Paul, Minn.....	287,736
Cambridge, Mass.....	110,879	Long Beach, Calif.....	164,271	Salt Lake City, Utah.....	149,934
Camden, N. J.....	117,536	Los Angeles, Calif.....	1,504,277	San Antonio, Tex.....	253,854
Canton, Ohio.....	108,401	Louisville, Ky.....	319,077	San Diego, Calif.....	203,341
Charlotte, N. C.....	100,899	Lowell, Mass.....	101,389	San Francisco, Calif.....	634,536
Chattanooga, Tenn.....	128,163	Memphis, Tenn.....	292,942	Scranton, Pa.....	140,404
Chicago, Ill.....	3,396,808	Miami, Fla.....	172,172	Seattle, Wash.....	368,302
Cincinnati, Ohio.....	455,610	Milwaukee, Wis.....	587,472	Somerville, Mass.....	102,177
Cleveland, Ohio.....	878,336	Minneapolis, Minn.....	492,370	South Bend, Ind.....	101,268
Columbus, Ohio.....	306,087	Nashville, Tenn.....	167,402	Spokane, Wash.....	122,001
Dallas, Tex.....	294,734	Newark, N. J.....	429,760	Springfield, Mass.....	149,554
Dayton, Ohio.....	210,718	New Bedford, Mass.....	110,341	Syracuse, N. Y.....	205,967
Denver, Colo.....	322,412	New Haven, Conn.....	160,605	Tacoma, Wash.....	109,408
Des Moines, Iowa.....	159,819	New Orleans, La.....	494,537	Tampa, Fla.....	108,391
Detroit, Mich.....	1,623,452	New York, N. Y.....	7,454,995	Toledo, Ohio.....	282,349
Duluth, Minn.....	101,065	Norfolk, Va.....	144,332	Trenton, N. J.....	124,697
Elizabeth, N. J.....	109,912	Oakland, Calif.....	302,163	Tulsa, Okla.....	142,157
Erie, Pa.....	116,955	Oklahoma City, Okla.....	204,424	Utica, N. Y.....	100,518
Fall River, Mass.....	115,428	Omaha, Neb.....	223,844	Washington, D.C.....	663,091
Flint, Mich.....	151,543	Paterson, N. J.....	139,656	Wichita, Kan.....	114,966
Fort Wayne, Ind.....	118,410	Peoria, Ill.....	105,087	Wilmington, Del.....	112,504
Fort Worth, Tex.....	177,662	Philadelphia, Pa.....	1,931,334	Worcester, Mass.....	193,694
Gary, Ind.....	111,719	Pittsburgh, Pa.....	671,659	Yonkers, N. Y.....	142,598
Grand Rapids, Mich.....	164,292			Youngstown, Ohio.....	167,720

SCATTERED AMERICAN LANDS

	AREA IN Sq. Mi.	POPULATION	CAPITAL CITY	POPULATION OF CAPITAL
Alaska Territory.....	571,065	72,524	Juneau.....	5,729
Guam.....	203	22,290	Agana.....	22,290
Hawaii Territory.....	6,441	423,330	Honolulu.....	179,326
Panamá Canal Zone.....	362	51,827		
Puerto Rico.....	3,423	1,869,255	San Juan.....	169,247
Virgin Islands.....	132	24,889	Charlotte Amalie.....	9,801

CANADA, NEWFOUNDLAND, LABRADOR

	AREA IN Sq. Mi.	POPULATION	CAPITAL CITY	POPULATION OF CAPITAL
DOMINION OF CANADA.....	3,466,556	11,506,655	Ottawa.....	154,951
Alberta.....	248,800	796,169	Edmonton.....	93,817
British Columbia.....	359,279	817,861	Victoria.....	44,068
Manitoba.....	219,723	729,744	Winnipeg.....	221,960
New Brunswick.....	27,473	457,401	Fredericton.....	10,062
Nova Scotia.....	20,743	577,962	Halifax.....	70,488
Ontario.....	363,282	3,787,655	Toronto.....	667,457
Prince Edward Island.....	2,184	95,047	Charlottetown.....	14,821
Quebec.....	523,534	3,331,832	Quebec.....	150,757
Saskatchewan.....	237,973	895,992	Regina.....	58,245
Northwest Territories.....	1,253,438	12,028		
Yukon Territory.....	205,346	4,914		
NEWFOUNDLAND and LABRADOR.....	152,734	289,516	St. John's.....	41,500

CITIES IN CANADA, WHICH HAVE MORE THAN 100,000 INHABITANTS

CITY	POPULATION
Hamilton, Ontario.....	166,337
Montreal, Quebec.....	903,007
Ottawa, Ontario.....	154,951
Quebec, Quebec.....	150,757
Toronto, Ontario.....	667,457
Vancouver, British Columbia.....	275,353
Windsor, Ontario.....	105,311
Winnipeg, Manitoba.....	221,960

LATIN AMERICA

IN MIDDLE AMERICA

	AREA IN Sq. MI.	POPULATION	CAPITAL CITY	POPULATION OF CAPITAL
Bahamas (Br.).....	4,404	68,846	Nassau.....	17,000
Barbados (Br.).....	166	193,000	Bridgetown.....	70,000
Bermuda (Br.).....	19	30,814	Hamilton.....	7,000
British Honduras.....	8,598	57,767	Belise.....	16,687
Costa Rica.....	19,238	623,000	San José.....	77,182
Cuba.....	44,217	4,778,583	Habana.....	970,000
Curaçao (Neth.).....	403	101,000	Willemstad.....	55,000
Dominican Republic.....	19,327	1,617,000	Ciudad Trujillo.....	97,500
Guadeloupe (Fr.).....	687	307,993	Basse-Terre.....	13,638
Guatemala.....	42,353	3,283,209	Guatemala City.....	225,553
Haiti.....	10,748	1,631,250	Port-au-Prince.....	115,000
Honduras.....	59,145	1,107,859	Tegucigalpa.....	55,755
Jamaica (Br.).....	4,722	1,173,645	Kingston.....	109,056
Leeward Islands (Br.).....	728	143,343	St. John.....	10,100
Martinique (Fr.).....	427	241,000	Fort-de-France.....	52,051
Mexico.....	758,061	19,653,552	Mexico.....	1,448,422
Nicaragua.....	53,668	983,160	Managua.....	126,222
Panamá.....	28,568	631,637	Panamá.....	111,893
Panamá Canal Zone (U. S.).....	362	51,827		
Puerto Rico (U. S.).....	3,435	1,869,255	San Juan.....	169,247
Salvador, El.....	13,176	1,704,000	San Salvador.....	114,998
Trinidad and Tobago (Br.).....	1,978	465,000	Port-of-Spain.....	100,595
Virgin Islands (U. S.).....	132	24,889	Charlotte Amalie.....	9,801
Windward Islands (Br.):				
St. Lucia.....	233	69,084	St. George's.....	5,000
St. Vincent.....	150	58,381		
Grenada.....	133	89,000		

CITIES, IN LATIN AMERICA, WHICH HAVE MORE THAN 100,000 INHABITANTS

CITY	POPULATION
Asunción, Paraguay.....	172,423
Bahía Blanca, Argentina.....	121,776
Barranquilla, Colombia.....	183,500
Belém, Brazil.....	222,900
Belo Horizonte, Brazil.....	226,100
Bogotá, Colombia.....	395,300
Buenos Aires, Argentina.....	2,616,624
Caracas, Venezuela.....	326,700
Córdoba, Argentina.....	354,000
Fortaleza, Brazil.....	142,453
Guadalajara, Mexico.....	227,631
Guatemala City, Guatemala.....	225,553
Guayaquil, Ecuador.....	181,893
Habana, Cuba.....	970,000
Kingston, Jamaica.....	109,056
La Paz, Bolivia.....	301,450
La Plata, Argentina.....	258,704
Lima, Peru.....	680,000
Managua, Nicaragua.....	126,222
Maracaibo, Venezuela.....	135,582
Medellín, Colombia.....	198,100
Mexico, Mexico.....	1,448,422
Monterrey, Mexico.....	185,833
Montevideo, Uruguay.....	747,665
Panamá, Panamá.....	111,893
Port-au-Prince, Haiti.....	115,000
Port-of-Spain, Trinidad.....	100,595
Porto Alegre, Brazil.....	294,500
Puebla, Mexico.....	137,695
Quito, Ecuador.....	174,354
Recife, Brazil.....	376,800
Rio de Janeiro, Brazil.....	1,931,334
Rosario, Argentina.....	511,000
San Juan, Puerto Rico.....	169,247
San Salvador, El Salvador.....	114,998
Santa Fé, Argentina.....	155,743
Santiago, Chile.....	985,000
Santiago, Cuba.....	143,000
Santos, Brazil.....	149,000
São Paulo, Brazil.....	1,408,500
São Salvador, Brazil.....	314,300
Tucumán, Argentina.....	162,000
Valparaíso, Chile.....	212,072

IN SOUTH AMERICA

	AREA IN Sq. MI.	POPULATION	CAPITAL CITY	POPULATION OF CAPITAL
Argentina.....	1,073,663	12,957,000	Buenos Aires.....	2,616,624
Bolivia.....	416,040	3,350,000	La Paz.....	301,450
Brazil.....	3,286,170	44,115,825	Rio de Janeiro.....	1,931,334
British Guiana.....	80,795	337,521	Georgetown.....	72,360
Chile.....	286,322	4,634,839	Santiago.....	985,000
Colombia.....	439,714	8,701,816	Bogotá.....	395,300
Ecuador.....	103,415	3,200,000	Quito.....	174,354
Falkland Islands (Br.).....	7,681	3,128	Port Stanley.....	1,246
French Guiana.....	34,740	37,000	Cayenne.....	11,000
Paraguay.....	150,515	954,848	Asunción.....	172,423
Peru.....	482,133	7,023,111	Lima.....	680,000
Uruguay.....	72,153	2,122,628	Montevideo.....	747,665
Venezuela.....	346,481	3,847,051	Caracas.....	326,700
Surinam (Dutch Guiana).....	54,291	174,000	Paramaribo.....	56,233

DISTANCES BY SEA AND BY AIR

In the following tables of distances by sea and by air, all of the figures represent *statute* miles. Statute miles are ordinarily used in measuring distances by land. Sea distances may be measured in *nautical* miles. It is difficult, however, to compare statute miles and nautical miles, because a nautical mile is a little longer than a statute mile. In these tables, distances by sea and by air may be compared easily, since reference is made to the same kind of miles, in both tables.

DISTANCES BY SEA

	STATUTE MILES
New York to Buenos Aires.....	6,752
New York to Callao, via Magellan Straits.....	11,061
via Panamá Canal.....	3,873
New York to Rio de Janeiro.....	5,486
New Orleans to Buenos Aires.....	7,009

DISTANCES BY SEA

	STATUTE MILES
New Orleans to Callao, via Magellan Straits.....	11,313
via Panamá Canal.....	3,200
New Orleans to Rio de Janeiro.....	5,868
San Francisco to Buenos Aires, via Magellan Straits.....	8,719
via Panamá Canal.....	10,075
San Francisco to Callao.....	4,587
San Francisco to Rio de Janeiro, via Magellan Straits.....	9,690
via Panamá Canal.....	8,804

DISTANCES BY AIR

	STATUTE MILES
New York to Chicago.....	724
New York to Los Angeles.....	2,460
New York to Seattle.....	2,440
New York to New Orleans.....	1,183

DISTANCES BY AIR

	STATUTE MILES
New York to Dallas.....	1,381
New York to Miami.....	1,100
San Francisco to Chicago.....	1,851
Chicago to New Orleans.....	822
Seattle to Juneau.....	870
Los Angeles to Honolulu.....	2,555
New York to Montreal.....	326
Chicago to Winnipeg.....	715
New York to Mexico (City).....	2,105
Los Angeles to Panamá.....	3,025
New Orleans to Panamá.....	1,600
New York to Habana.....	1,334
New York to Rio de Janeiro.....	4,964
Los Angeles to Buenos Aires.....	6,148
San Francisco to Santiago.....	5,960
Buenos Aires to Santiago.....	731
Panamá to Santiago.....	3,000
Juneau to Santiago.....	7,320